

06/2019

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WARP portable

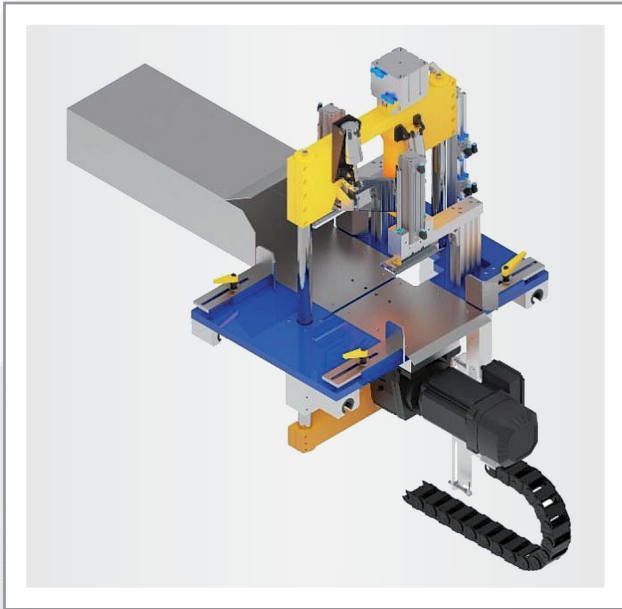
The handheld device for mobile wall thickness measurement of medium and large-sized pipes!

WARP certification



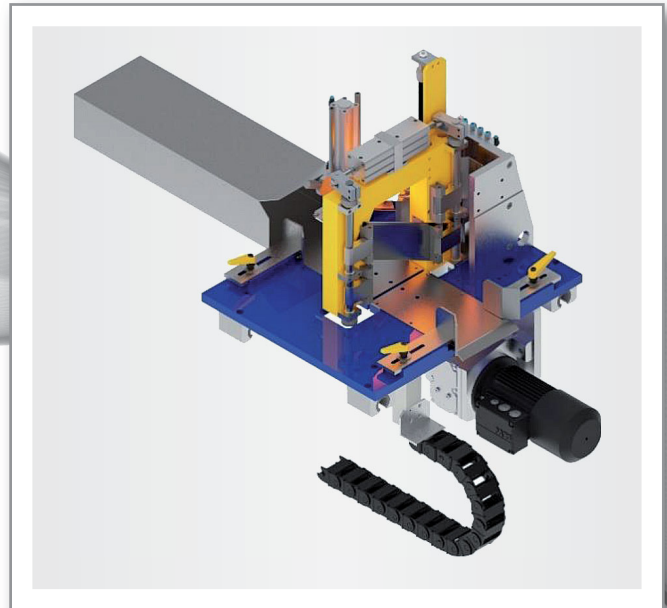
www.inoex.de

20 Year Profile Guillotines made by Stein Maschinenbau - a continuously development



PT1 Profile Guillotine

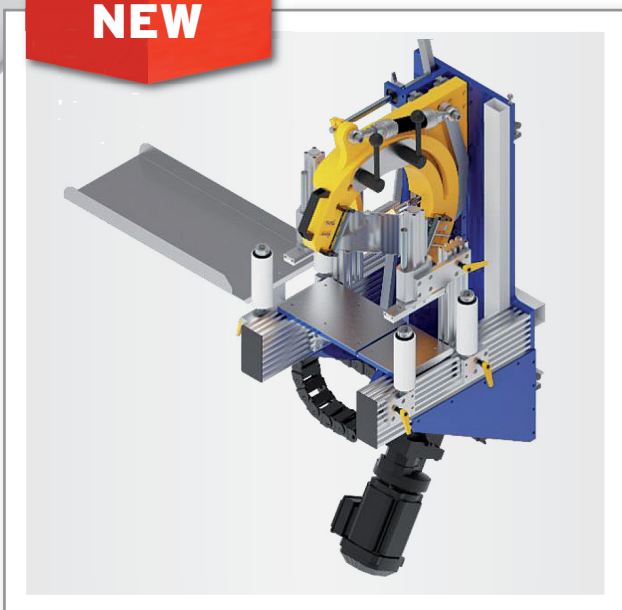
- solid design
- high cutting quality
- many hundreds times in operation



PTW Profile Guillotine

- 2 cutting angles selectable
- optimum cut with different profile orientations

NEW



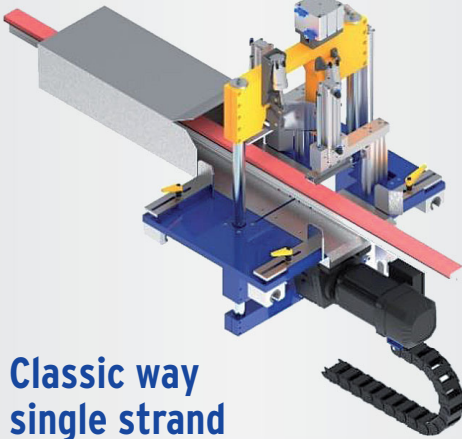
PTT Profile Guillotine

- cutting angle continuously adjustable
- optimum cut for every profile shape

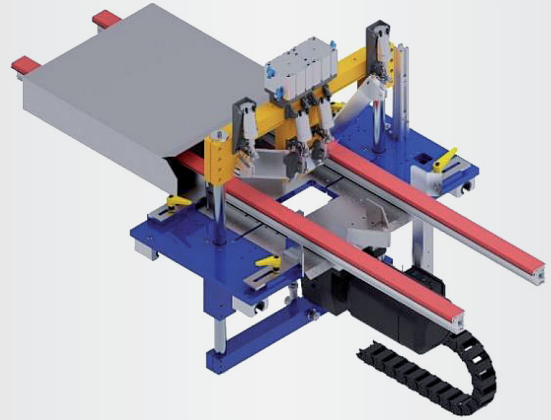
In addition to the guillotines shown, numerous customer-specific solutions have already been implemented.

Challenge us!

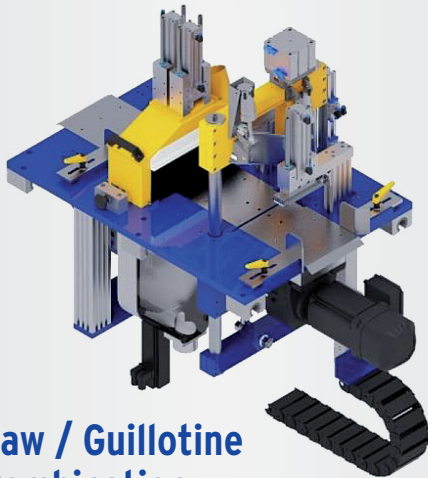
Profile Guillotines made by Stein - fits to every system of profile extrusion



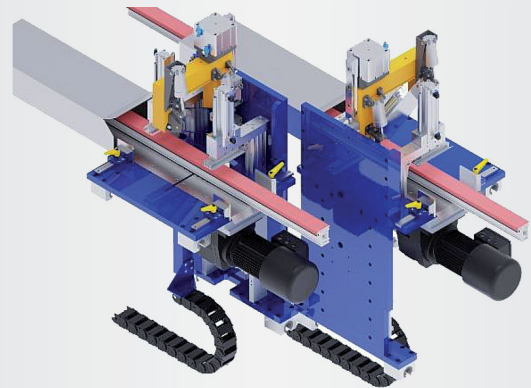
Classic way
single strand



double strand or dual strand



Saw / Guillotine
Combination



- Are different material or different profile designs made on same line?
- Saw / Guillotine Combination will cover it

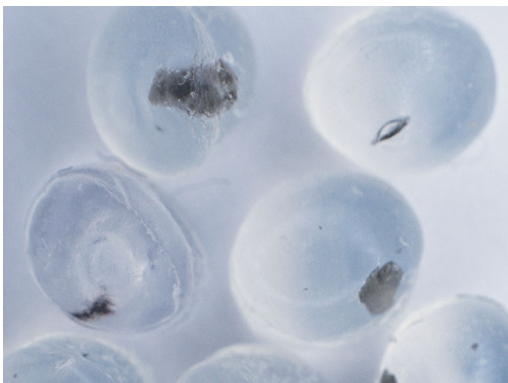
Next step Smart Factory!
Equip your line with machines made by Stein!



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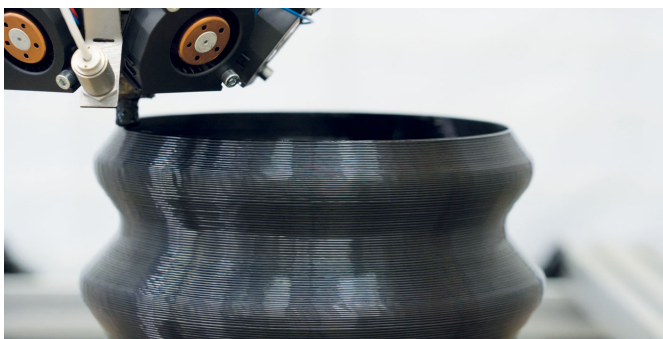


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Even smallest metallic contamination in plastic pellets can cause significant problems during the production and processing of plastics. SIKORA has developed a special off-line inspection system that reliably detects and analyzes contamination from 50 µm in plastic pellets. With the support of X-ray technology, a non-destructive look into and through plastic pellets is possible

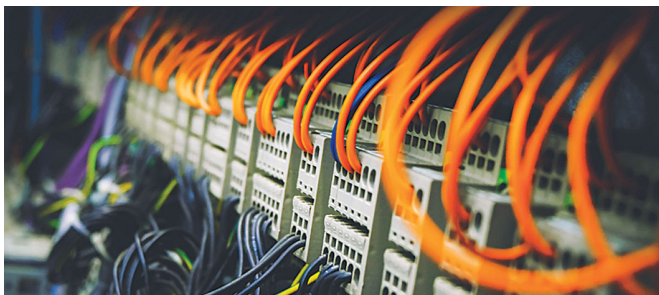
The machine manufacturer Hans Weber Maschinenfabrik, world-renowned for the production of extruders and grinding machines, is further expanding its product portfolio with the introduction of the "Robotics & Automation" and "WEBER Additive" divisions

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Siechem Wires and Cables has developed underwater cables using a tailor-made BASF plastic additives package. The additives play a crucial role in stabilizing the production process and extending the service lifespan of underwater cable sheathing

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Key DuPont exhibits and the company's commitment to a collaborative and innovation-driven approach are the major highlights in the interview with Jeroen Bloemhard, Global Vice President at DuPont Transportation & Industrial

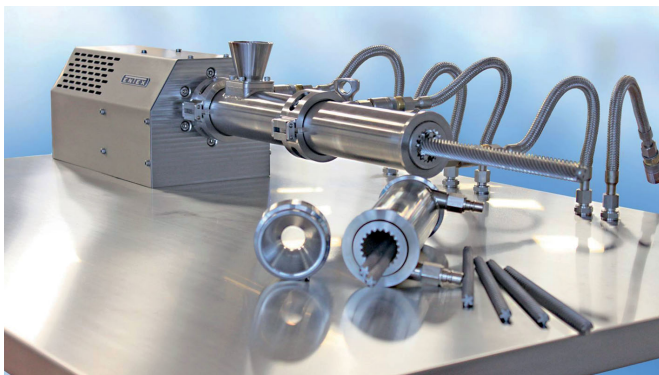


SML is developing foamed sheet for hot fill applications with new features in terms of heat resistance, insulation and recyclability in a joint R&D programme together with its partner KIEFEL. The basis for these new products is a 3-layer PET (or PP) sheet with a physically foamed central layer

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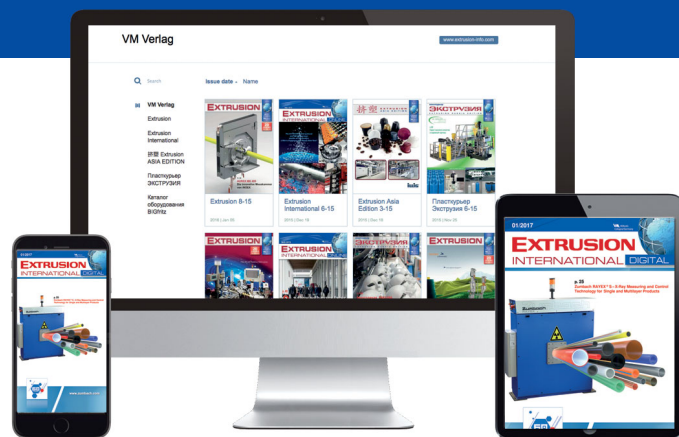
ENTEX Rust & Mitschke is once again represented this year with a stand in the German pavilion at the interplastica fair in Moscow. The main attraction at the exhibition stand will be the new L-WE 30 laboratory roller extruder

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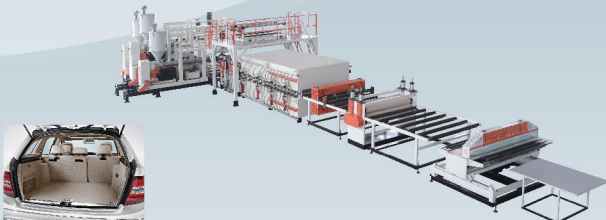

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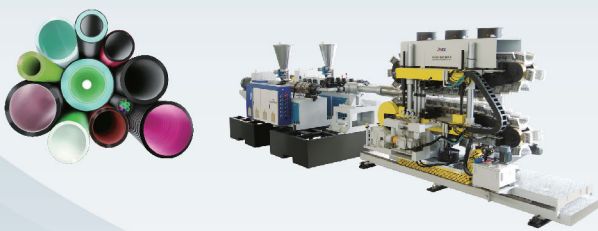
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SPC Calcium-plastic Environmental Floor Extrusion Line

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interplastica 2020

28. – 31. 01. 2020
Moskow / Russia
www.interplastica.de

COMPLAST South Africa 2020

03. – 05. 03. 2020
Johannesburg / South Africa
www.complastexpo.in

12th European Thermoforming Conference

18. - 20. 03. 2020
Geneva / Switzerland
SPE - European Thermoforming Division
www.e-t-d.org

wire 2020 and Tube 2020

30. 03. – 07. 04. 2020
Düsseldorf / Germany
www.wire.de, www.Tube.de

COMPLAST Ethiopia

19. – 21. 06. 2020
Addis Ababa / Ethiopia
www.complastexpo.in

Plastasia 2020

19. – 22. 06. 2020
Bangalore / India
www.plastasia.in

interplas

29. 09. - 01. 10. 2020
Birmingham / United Kingdom
www.interplasuk.com

IPF Japan 2020

13. - 17. 10. 2020
Makuhari / Japan
International Plastic Fair Association
ipfjapan.jp/english/

Fakum 2020

13. - 17. 10. 2020
Friedrichshafen / Germany
P. E. SCHALL GmbH & Co. KG
www.Fakuma-Messe.de

Partnership Agreement signed at K 2019

■ BST eltromat International, a leading manufacturer of quality assurance systems in web-processing production processes, and SeeOne Vision Technology srl, a manufacturer of surface inspection systems headquartered in Florence, Italy, signed a partnership agreement at K 2019. BST eltromat Italia, a 100% subsidiary of the BST GROUP, has been working with SeeOne for years on special surface inspection requirements. The excellent cooperation has now resulted in the partnership agreement, which was signed by BST eltromat Managing Director Kristian Jünke and Leandro Giovannoni, General Manager of SeeOne, at the BST eltromat booth.

SeeOne has been developing and producing surface inspection systems for a variety of industries for over 30 years. Their product portfolio covers various applications from rewinders, slitters, blade coating machines, foil extruders or calenders, milling machines as well as various coating and application machines. The main product LINESCAN has a variety of uses in these cases, because its modular design allows the cameras and light sources to be adapted to the specific location and scenario. In addition, the surface inspection specialists design individual solutions for special customer requirements.

SeeOne's solutions detect various defects, e.g., insects, dirt, inclusions, holes in various materials such as foils, paper and cardboard as well as metallized foils, ideally complementing BST eltromat's product portfolio. "With SeeOne, we have gained an experienced partner for surface inspection. Together we can respond even more flexibly to the special challenges and individual requirements of our customers and support them more effectively in optimizing their production processes," says Jünke, welcoming the closer cooperation with the Italian company. Leandro Giovannoni from SeeOne also has high expectations of the partnership with BST eltromat: "With BST eltromat, we have a strong partner at our side with a worldwide sales network who will give us access to new markets. The worldwide presence of BST eltromat's experts support us in finding the perfect solutions for our customers' quality assurance needs.

The knowledge from surface inspection with SeeOne can be used in various ways to optimize production processes. At K, BST eltromat exhibited SeeOne's LINESCAN surface inspection system to show its customers in film extrusion the benefits of this additional component in quality assurance. The knowledge can have effects on the further converting of the foil, such as in printing.

BST eltromat Managing Director Kristian Jünke (right in picture) and Leandro Giovannoni from SeeOne sign the partnership agreement at the BST eltromat booth at K 2019



■ BST eltromat International GmbH
www.bst.group

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- // Torque motor optional



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en/pipe](http://extrudertechnologie.de/en/pipe)

12th European Thermoforming Conference

19th - 20th March 2020, Geneva Switzerland

■ This main event of the European thermoforming industry will be organised again by the European Thermoforming Division of the Society of Plastics Engineers.

This conference, which is the sector's most important platform for information and communications between decision makers in business, non-partisan experts from the sector, leading suppliers of solutions and the related scientific community has established itself as the forum for thermoforming technology.

Presentations, discussion workshops and an exhibition – where the focus will be on dialogue – all contribute to informing the participants from Europe and USA. The theme of the conference “Thermoforming for a Green Future” will act as a thread linking together the exhibitors, whether from the world of science, the supply sector or the applications business. The presentations will be comprehensive and all-



encompassing in terms of the materials, processes and applications that they cover.

The attendees will consist of a significant cross section of processors, end-users, material suppliers, tool makers, machine and allied equipment suppliers.

■ SPE - Society of Plastics Engineers/
European Thermoforming Division
www.e-t-d.org

PLAST 2021: Registration is Open

■ Registration opened on November 12 for the upcoming edition of PLAST–Triennial International Exhibition for the Plastics and Rubber Industries, which will take place from 4 May to 7 May 2021 at the FieraMilano Fairgrounds in Rho.

In an increasingly globalized and fast-developing market, the processing industry has a constant need for cutting-edge processes, interconnected machinery meeting the highest safety standards, and high-performance recyclable raw materials to produce articles for a broad array of essential applications: from packaging to automotive, from construction to electricity and electronics, from medical to agriculture.



The upcoming edition of PLAST will once again feature the three satellite fairs, each dedicated to a sub-sector of excellence and its associated start-ups: RUBBER (in its fourth edition, dedicated to the world of elastomers, in collaboration with Assogomma), 3D PLAST (in its third edition, focusing on additive manufacturing and related technologies), and PLAST-MAT (second edition, exploring innovative plastics).

The first exhibitors registered during the recent K 2019 in Düsseldorf and many others showed interest, taking advantage of the early registration deadline of 10 February 2020, which entitles them to a 20% discount on the participation fee as well as priority stand assignments.

■ www.plastonline.org

Cooperation

■ The Reifenhäuser Group and Russia's largest integrated petrochemicals producer SIBUR extended their cooperation and joined forces in new projects aimed at polymer processors. SIBUR experts attended the Reifenhäuser Open House on October 17-22 at the Troisdorf headquarters during K 2019. At its Technology Center, Reifenhäuser demonstrated seven extrusion lines – six of which are completely new.

In May, Reifenhäuser and SIBUR signed a cooperation agreement to develop new polymer products at SIBUR's PolyLab center, Russia's first R&D center for the development and testing of polymer products. Reifenhäuser will use the products developed at PolyLab based on SIBUR's polymers as demonstration projects for its potential customers. Moreover, the two companies will use the PolyLab to launch custom solutions for the production of polymer sheet, film, and nonwoven materials for mutual customers.

The cooperation now goes one step further. At the end of August, Reifenhäuser and SIBUR defined the cooperation's next steps and goals. In future, SIBUR's R&D center, which measures over 5000 sq. m, will process new raw materials that meet sustainability requirements



Reifenhäuser Cast Sheet Coating supplied two extrusion lines and Reifenhäuser Blown Film Polyrema delivered a 3-layer blown film line for PolyLab. SIBUR employs all three lines for R&D purposes to test new developments and film recipes.

The cast film line, a type MIDEX 5-60/120/60-2000, is designed to produce CPP film, LDPE film, and stretch film. Its particular features include Reifenhäuser extruders that process all polymers without changing screws and the MIDEX-RA rotary arm winder that is adapted to processing stretch and PET film. SIBUR uses the second line, a type MIREX-MT-H 1-80-0900 sheet line, to process polypropylene film which is then processed into cups and trays on a thermoformer. The core of this line is the polishing stack of the MIRX-MT-H series. It has vertical polishing rolls and mechatronic nip adjustment. The two lines are equipped for the production of PET film.

New raw materials and film recipes go hand in hand with the current debate on sustainability and the Circular Economy. Ulrich Reifenhäuser, CSO of the Reifenhäuser Group, emphasized that the absolute decisive factor here is the practical handling of plastics. "Our industry is called upon to incorporate plastics into the Circular Economy. We bear co-responsibility for setting up collection systems to recycle plastic waste, minimize production waste, and make advances in new application fields, such as lightweight construction in the automotive industry. This is one of the reasons we are particularly delighted in the cooperation with SIBUR. They will test new raw materials developments at their ultra-modern R&D center and in the future, they will launch products that are recyclable and reusable," he said.

► Reifenhäuser Cast Sheet Coating
www.reifenhauser-csc.com/en/

SPE Thermoforming Division Conference will be Biennial

■ The Society of Plastics Engineers (SPE) Thermoforming Division has changed the frequency of its SPE Thermoforming Conference from annual to biennial.

The Division is cancelling plans for the 2020 SPE Thermoforming Conference and will hold the next Conference in 2021. The event will take place on September 20-22, 2021 in Grand Rapids, Michigan.

"For the past several years, the Division's Board of Directors has received feedback from attendees, sponsors and exhibitors that an annual conference is no longer what the industry needs," said Eric Short, SPE Thermoforming Division Chair. "The Board felt that it was time to act by moving the conference to every other year. It wasn't an easy decision, but we are convinced that it was the right one."

Short added that the Division plans to further enrich the content delivered during the Conference, minimize conflicts with other events, and ultimately deliver greater value to all stakeholders.

"Our challenge as a board is to develop creative strategies to continue to fulfill our mission during the non-conference years," said Short.

More information is available by contacting.

► THE SPE THERMOFORMING DIVISION
thermoformingdivision.com
 Lesley Kyle, lesley@openmindworks.com



THERMOFORMING

Space Requests for NPE2021 Tracking Ahead of NPE2018's Record-Breaking Pace

■ The Plastics Industry Association (PLASTICS), hosts of NPE: The Plastics Show, announced that company requests for exhibit space at NPE2021 are already outpacing the demand for space ahead of NPE2018 – a year in which the show sold out at its official Space Draw event for the first time in the show's more than 80-year history. Space on the NPE trade show floor – which exceeded 1.2 million square feet in 2018 – is assigned through the Space Draw process:

- First, companies send requests for space on the trade show floor by the Space Draw deadline.
- Second, their space selection order for the Space Draw is determined by lottery based on priority show history.
- Finally, companies draw their space between January 21 and April 9, 2020.

"By the measure of space requests," said PLASTICS Vice President of Trade Shows and Marketing Susan Kryz, "we're well ahead of where we were at the same point in the NPE2018 show cycle, before we broke all our records. More companies

are requesting exhibit space and the amount of space being requested is more than was requested for 2018. This is a strong sign for NPE2021 and a reminder to other companies hoping to make their mark on the show floor to get their space requests in now before time – and space – run out," she added. To participate in the Space Draw process, companies must submit their applications and deposits by October 31, 2019. "That NPE2021 space applications are outpacing NPE2018's just illustrates how much demand there is for plastic materials and products today," said PLASTICS President & CEO Tony Radoszewski. "The outlook for plastics continues to exceed expectations, and it's driven by our industry's commitment to innovation and the kind of sales and relationship-building that only take place on the NPE show floor."

► The Plastics Industry Association (PLASTICS)
plasticsindustry.org
npe.org/space-draw

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14th Global Bioplastics Award 2019



Carbiolice, (France), Enzymatic masterbatch to make PLA home compostable

■ For the 14th time now, the international trade publication bioplastics MAGAZINE is honoured to present the "Bioplastics Oskar".

Five judges from the academic world, the press and industry associations from America, Europa and Asia have selected the five finalists for the 14th Global Bioplastics Award. The prize will be awarded to the winner on December 3rd, 2019 during the 14. European Bioplastics Conference in Berlin/Germany.

The 14th Bioplastics Award recognises innovation, success and achievements by manufacturers, processors, brand owners, or users of bioplastic materials. To be eligible for consideration in the awards scheme the proposed company, product, or service must have been developed or have been on the market during 2018 or 2019.

The 5 shortlisted companies/products are (without any ranking):

Carbiolice, (France) – Enzymatic masterbatch to make PLA home compostable: In December 2018 Carbiolice (Riom, France) launched its innovative and unique enzymated Evanesto® masterbatch – an additive that enables PLA to biodegrade under typical home composting conditions.

Even if PLA offers very good properties for rigid applications, its biodegradability is currently limited to industrial composting.

Carbiolice has now developed Evanesto, a new enzymatic additive to be used as a masterbatch, that will make PLA polymer compostable under domestic conditions.

Initial tests carried out by independent laboratory OWS on thin films containing 30% of PLA and 5% of Evanesto, and the rest being other biodegradable and biobased polyesters, such as biobased PBAT, TPS... have shown that complete disintegration is achieved within a time frame of 182 days (6 months) under home composting conditions.

Tests on thicker films obtained by calendering and thermoforming are still ongoing, but the initial results are very positive.

www.carbiolice.com

Bio4self (15 partners form EU) – Self-reinforced PLA composites: Self-reinforced PLA composite materials, which are being developed as part of the Bio4self project funded by European Research Fund H2020, open up completely new areas of application for the biobased plastic PLA.

In the project, two different PLA types with different melting temperatures are combined to a self-reinforced PLA composite (PLA SRPC) in such a way that the higher melting PLA is embedded as a reinforcing fiber in the lower melting matrix. The resulting material stiffness can compete with commercially available self-reinforced polypropylene (PP) composites. This makes it possible to produce mechanically demanding components for the automotive and electrical household appliance sectors, among others. www.bio4self.eu

Kartell (Italy) – First modular storage system from Bio-on's bioplastic: Kartell (Noviglio, Milan, Italy) is offering a new eco-friendly and sustainable edition of one of its best sellers - a modular storage unit in the 100 % natural bioplastic material by Bio-on (Bologna, Italy). The Componibili storage unit, which is cylindrical in form with sliding panels, was first created by Italian designer and Kartell co-founder Anna Castelli Ferrieri in 1967. www.bio-on.it, www.kartell.com

Dantoy (Denmark) – Biobased toys: In February 2018 launched its new line of BIO products, which has gained much more attention than initially anticipated.

All of Dantoy's Plastic toys are licensed for the Nordic Swan Ecolabel, thus they must comply with the world's strictest requirements for plastic contents, going far beyond the Danish law.

www.dantoy.dk

Nölle Kunststofftechnik and Fraunhofer IAP (Germany) – New splint for bone fractures: A novel splint made of PLA for immobilizing bone fractures has been developed that can be repeatedly reshaped during treatment.

The new immobilisation concept, called RECAST was developed by Nölle Kunststofftechnik It makes use of variously sized pre-shaped splints made from biobased and biodegradable PLA.

The plastics processor worked closely with the polymer developers at the Fraunhofer IAP in Potsdam-Golm on the development of the optimum material. It was decided to use PLA as a base polymer, a bioplastic that has a major disadvantage for most applications: It becomes soft at around 58 °C. The low thermal softening point of PLA is a great advantage when used as an orthopaedic splint. This means that the product can be shaped repeatedly and quickly by heating. The Fraunhofer researchers combined PLA with suitable fillers and developed a formulation that met all the requirements.

www.noelle-kunststofftechnik.de, www.iap.fraunhofer.de

New Chief Technical Officer appointed

■ Vetaphone, the Danish pioneer and market leader in surface treatment technology, has appointed Nicolas Ahlburg as its new Chief Technical Officer (CTO). Ahlburg brings with him a wealth of experience in the technical and service field from previous positions at Nortec A/S, where he was a Business Development Engineer and went on to become a Master of Science (MSc) specialising in technology-based business development.

His new responsibility as CTO at Vetaphone will see him maintain the company's market lead in Corona and Plasma surface treatment technology combined with developing the company's already high level of customer satisfaction.

Speaking for Vetaphone, CEO Frank Eisby commented: "We are delighted to have secured the services of someone so well qualified for our CTO position. Nicolas brings first-hand experience and

Nicolas Ahlburg is the new Chief Technical Officer at Vetaphone



expertise in achieving customer satisfaction through technical solutions and will be a key member of the Vetaphone team as we drive the company towards our ambitious future targets."

Vetaphone
www.vetaphone.com

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Doubts and Hopes for Italian Manufacturers of Plastics and Rubber Processing Machinery



■ Once again, the mid-year figures show a drop in Italy's imports and exports of plastic and rubber machinery, though the reduction is less marked than for previous months. In fact, in comparison with the first six months of 2018, imports for the period January to June 2019 showed a drop of about 17% (with respect to the figure of -20% in March), while exports slowed down by about 5% (-8% in March). As a result, the positive balance of trade showed improvement, though minimal.

This in summary is the situation revealed by the Amaplast Studies Center in its analysis of the foreign trade statistics published by ISTAT.

An important factor shown by the statistics is the contraction in trade with Italy's principal and historic business partner, namely Germany: the supply of Italian-built plant to German processing companies suffered a 26% slump, and the purchase of German technology by Italian companies fell by a third. In actual fact, this comes as no surprise, as it is an accurate reflection of Germany's economic slowdown, and in particular that of its industrial sector. Moreover, exports by our German competitors also shrank. Even before the publication of official mid-year statistics, the respective trade association had revised the figures for 2018 and forecasts for 2019, announcing that it expected a 10% reduction in turnover, caused primarily by the crisis in the automotive sector and the difficulties linked to plastic's public image. Italian companies are having to come to terms with the same situation.

Overall, over the first six months of 2019, Italian processing companies imported less machinery from their major European suppliers – Germany, Austria, France and Switzerland – to the benefit of Asian suppliers, above all China, and Japan though to a lesser degree in terms of total value.

As mentioned above, exports revealed a reduction in overall value, but an improvement for some specific export categories, with respect to previous months.

In a context of instability, negatively affected by the all-too-familiar climate of political and economic turbulence, the views that Amaplast collected after the summer break from companies operating in this sector revealed a less than optimistic outlook. Overall, there is concern for the tendency towards a postponement or reduction in orders by customers.

"Current market conditions are not encouraging," declared Dario Previero, president of Amaplast, "but the companies in the sector have great hopes for the next important event for the sector: the trade fair K, to be held at Düsseldorf from 16 to 23 October, where there will be many Italian exporters."

"The event's international standing," continued Dario Previero, "will enable companies to meet consolidated clients and potential new customers from all over the world in order to present the latest technological innovations that they have developed – state-of-the-art equipment in terms of performance, energy consumption and above all sustainability – that could be of fundamental importance in attaining the objectives of the framework being developed in light of the move towards the Circular Economy."

Italy is the second-largest exhibiting nation at the show, behind just the host country, with almost 400 companies of which about 330 are machinery and plant manufacturers.

Amaplast, which has implemented a powerful campaign in support of Italian exhibitors, presented at K with an institutional stand providing information on its industrial sector, distributing the magazine MacPlas and providing advance information on the show PLAST 2021 (Milan, 4-7 May 2021), for which organizational and promotional activities will move into top gear after the show in Germany.

► **Amaplast**
www.amaplast.org/en

Moving to Part-Time Role

■ There is no such thing as retirement for an industry legend like Duane Smith. After 47 accomplished years, Smith recently announced he'll be transitioning into a part-time role from his current position of process manager, web handling and specialty winding at Davis-Standard. Even with a reduced schedule, Smith will continue to support Davis-Standard's technical leadership, deliver technical presentations and training classes, and continue his consulting work on web handling and winding.

"I find great joy in making new discoveries and sharing knowledge," said Smith. "I am passionate about our industry and grateful for the opportunities I've had to work with so many out-

standing colleagues and peers over the years." He added, "Even though I am pulling back into semi-retirement, I look forward to continued collaboration in advancing web handling and winding techniques to improve processes."

"Duane Smith is an enthusiastic and motivated innovator who has worked tirelessly to advance web handling and winding best practices worldwide," said Jim Murphy, Davis-Standard President and CEO. "We congratulate him on going part-time, and are grateful to continue to have him as resource in the years to come. We know his work is far from finished!"

► **Davis-Standard, LLC**
davis-standard.com

Gold for Packaging Innovation



Eric Roegner (center), President of Amcor Rigid Packaging, accepts 2019 Packaging Innovation Award at the K Show in Dusseldorf, Germany

■ Amcor engineers and designers developed a unique solution to address denting and won Gold for Packaging Innovation from DOW. Amcor leaders from its rigid packaging business recently accepted the 2019 Packaging Innovation Award at the K Show in Dusseldorf, Germany. The award recognizes some of the world's most innovative packaging breakthroughs in technology, customer experience and responsible packaging.

The Amcor-designed Geo-Strap™ base for Nestle's Coffee-mate® natural bliss® Cold Brew bottle reduces vacuum denting at the shoulder. Nestle consulted with Amcor to modify the design while eliminating the denting. The Geo-Strap base incorporates two other hot-fill base technologies, PowerStrap™ and PowerFlex™. The new base is a low-profile, vacuum-absorbing design that flexes to counteract the vacuum generated when the product absorbs oxygen. The Geodesic base design shifts weight out of the base and into the shoulder, while preserving the overall weight of the container.

The bottle is made from PET which is infinitely recyclable and compared to other packaging types produces up to 70% less greenhouse gas emissions (with existing technologies including chemical recycling and compared to glass and aluminum cans).

"We're honored to receive this innovation award," said Eric Roegner, President, Amcor Rigid Packaging. "By modifying the preform design of the container, our Geo-Strap maintains the container's light weight, which keeps the Cold Brew container 4 to 8 grams smaller than competitor products. The new design also improves performance and consumer appeal of the container."

Amcor
www.amcor.com

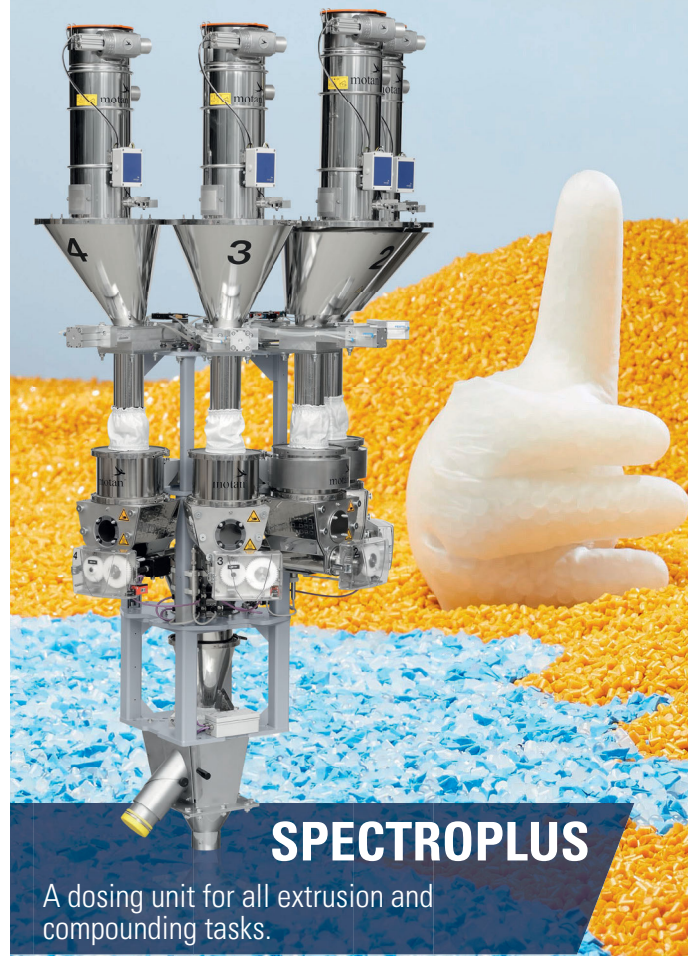
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www.motan-colortronic.com

Open Day for the 70th Anniversary

■ AZO GmbH + Co. KG in Osterburken, Germany celebrated its 70th anniversary this September. The company was founded in Osterburken by Adolf und Marianne Zimmermann in 1949 and named AZO (Adolf Zimmermann Osterburken). It has grown from its beginnings as a visionary millwright with a workshop in a former sheepfold to become an innovative group of industrial companies that operates worldwide and offers end-to-end solutions in the field of automated handling of raw materials. For director Rainer Zimmermann, the son of the company's founder, it is important that AZO is and

Around 7500 visitors came along to the company grounds, which extend over a 70,000 sqm area



remains a family business, even after 70 years. "Our passion lies with the automation and logistics of raw materials. The proficiency we offer to our customers creates a basis for their quality products."

True to the motto "70 years of AZO – One company. One family.", the anniversary was fittingly celebrated with an open day and an evening event for the workforce. A cordial invitation to come to Osterburken for the open day was extended to the interested public. Around 7500 visitors came along to the company grounds, which extend over a 70,000 sqm area, to learn about the business.

An evening event was held for AZO's staff with around 1500 guests. The entire workforce and retired AZO employees, who now number almost 200, were invited together with their partners.

In 2018, the AZO Group achieved a turnover of 182 million euros at sites in eight countries and employing more than 1000 people. Seven sales subsidiaries and over 30 agents provide extensive customer support worldwide.

■ AZO GmbH + Co. KG
www.azo.com

Market Study: Polyethylenen – HDPE (5th ed.)

■ High Density Polyethylene (HDPE) rank amongst the most sold plastics and their demand continues to increase. "HDPE is the polyethylene type with the highest strength and the lowest flexibility" explains Oliver Kutsch, the CEO of the market research company Ceresana. "The strong and somewhat hard plastic is suitable for a large spectrum of uses: for rigid containers and pipes, as well as for films and a multitude of products for the transportation and electronic industry." Ceresana publishes an extensive report about the global market for HDPE for the fifth time already. The current market study expects an increase of HDPE demand by an average of 2,9% per year worldwide, by 2026. The sectors pipes, packaging films as well as heavy duty industry sacks are among the most dynamic growing markets. The Asia-Pacific Region is by far the biggest consumer of HDPE with a market share of 48%.

The Study in Brief:

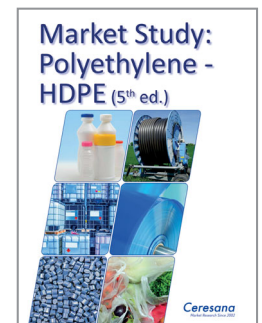
Chapter 1 provides a detailed description and analysis of the global market for High Density Polyethylene (HDPE) – including forecasts until 2026: The development of demand, revenues as well as the development of production will be depicted

ed for each region. Furthermore, the application areas of HDPE will be examined.

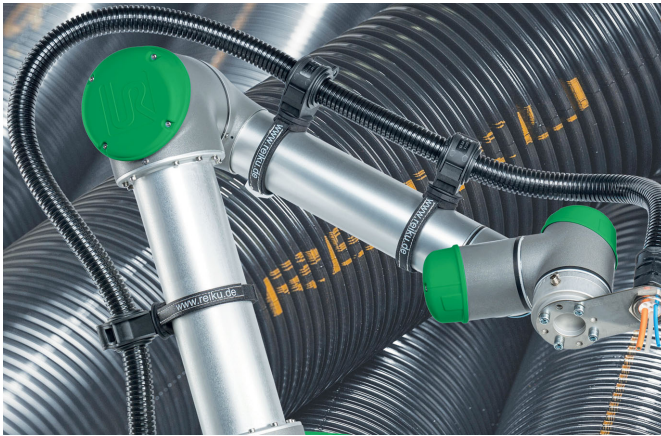
In Chapter 2, the 29 most important countries for the HDPE market - from Germany and the EU to South Africa, from America to Asia - will be looked at individually. Depicted will be the demand, revenues, trade, production and capacities. Demand and revenues will be broken down for the individual application areas as well as for the processing technologies, injection moulding, blow moulding, extrusion and other technologies.

Chapter 3 provides useful company profiles of the most important HDPE producers, clearly arranged according to contact information, turnover, profit, product range, production site, capacity and profile summary. Extensive profiles of 83 producers are provided.

■ Ceresana
www.ceresana.com/en/market-studies/plastics/polyethylene-hdpe/



Corrugated Tubing made of Regenerated Polyamide for Cable Protection brings Additional Sustainability to the World of Industrial Robots



With cable protection tubing made of regenerated polyamide, REIKU is once again making an impact in matters of sustainability (© REIKU)

■ With its new cable protection tubing of 100 % regenerated polyamide 12, REIKU, developer and manufacturer of high-quality cable protection systems for robotics and automation, is once again making its mark in matters of sustainability. The extended product range, which also includes corrugated tubing of biobased polyamide 11, has a nominal width ranging from 7 mm to 95 mm for the entire field of application from cobots right up to large industrial robots. Agiplast, a pioneer in the re-generation of engineering plastic compounds and a development partner of REIKU, produces and supplies the halogen-free, self-extinguishing, non-flame-propagating re-compound (RGN by Agiplast) in consistently high and traceable quality. REIKU markets the respective corrugated tubing using the PARAB identification code.

Managing Director David Guitton: "In our industry, an uncompromising commitment to consistent high quality is one of the fundamental conditions for lasting customer confidence. For this reason, we did not make it easy for ourselves to switch to processing regenerated Polyamide for some of our products. In extensive tests, our supplier Agiplast was able to prove that this material offers exactly the same short and long-term mechanical properties as our conventional materials. And we naturally also make sure that the products we make from this re-compound comply with the most demanding specifications with regard to fire prevention – which is extremely important in our segment – and also has the required very high flexural fatigue strength. We can, with a good conscience, therefore provide the same guarantee as we do with the corresponding corrugated tubing made of virgin material."

Together with the cable protection tubing of biobased PA 11, which has been available for some time now and even exceeds

the performance of conventional alternatives under dynamic flexural fatigue stress, REIKU now offers its customers two product families that both help to save fossil raw materials. Says Peter Sailer, who shares the company management with David Guitton: "The environmental aspect does not stop at industrial applications. We recognized this trend at an early stage and invested accordingly to underline our commitment to sustainability and to support our customers – both OEMs and end users – in implementing their own environmental strategies. Customer applications, in some cases under extremely rough 24/7 industrial conditions, confirm that both our regenerate-based and our biobased polyamide product comply with all the expectations. They enable uninterrupted operating times for cost-efficient production over just as long a period as the types based on conventional PA."

REIKU GmbH Kabelschutzsysteme
www.reiku.de

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Successful Run of Groundbreaking Plastics Recycling Technology

■ PureCycle Technologies today announced it has successfully completed purified waste carpet from its Feedstock Evaluation Unit (FEU), transforming discarded carpet into clear, odorless, ultra-pure polypropylene (UPRP) resin through its proprietary plastics recycling technology, developed and invented by Procter & Gamble. The successful scaling of the technology unlocks the value for a wide range of waste polypropylene (PP) that can be restored to its original virgin-like condition. This technology will result in a substantial increase in demand for waste PP and will help to provide alternatives to landfilling and exporting plastic waste.

The FEU is the first of two phases for PureCycle's plant in Hanging Rock, Ohio. The second phase, which will come on-line in the summer of 2021, will process 119 million pounds of waste PP each year. The plant is expected to produce over 105 million pounds of virgin-like PP per year, which will be used in consumer goods packaging, home furnishings and other applications that currently have very limited recycled PP options today. PureCycle is also working towards submitting for a letter of non-object from the FDA for our ultra-pure recycled polypropylene to be used in food grade applications.

"There is an overwhelming demand for high-quality recycled polypropylene, and this milestone is a huge step for us – and the industry – toward addressing a growing market that is demanding recycled applications," said Mike Otworth, CEO of PureCycle Technologies. "This achievement not only proves the technology at scale, but also builds on the momentum of the business as we move closer towards scaling operations beyond our first plant."

The development of the technology began when P&G was looking for more ways to incorporate additional recycled



PureCycle Technologies celebrates successful run of groundbreaking plastics recycling technology (Photos: PureCycle)

content into their applications, specifically targeting PP. With limited amounts of rPP available in the market, P&G set out to develop their own process to purify waste polypropylene. This groundbreaking innovation is the heart of PureCycle and continues to be a key initiative for P&G and their goal of reducing petroleum plastic in their packaging by 50%.

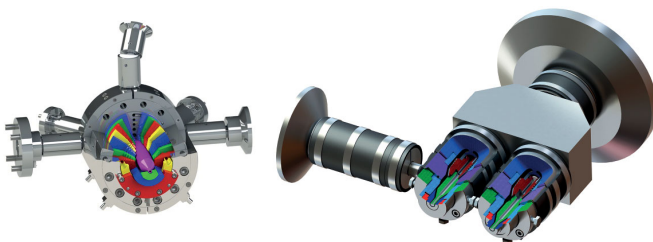
The PureCycle process removes color, odor and impurities, producing virgin-like resin. This Ultra-Pure Recycled Polypropylene (UPRP) delivers a consistent product that meets virgin-like specifications to meet the demands of various industries. In fact, demand for recycled PP is so high, PureCycle's first plant is fully subscribed and has begun site selection for our large-scale operation in Europe.

PureCycle Technologies is portfolio company of Innventure, a Wasson Enterprise Partnership.

► PureCycle Technologies
purecycletech.com

Extrusion Tooling

■ Guill introduces 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 automotive, medical, appliance and industrial 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, as well as fuel line constructions, multi-layer PEX pipe and drip irrigation applications, among others. The Guill design further allows thin layer combinations of polymers and adhesives to .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.

► Guill Tool & Engineering
www.guill.com

Thickness, Grammage and Density Measurement

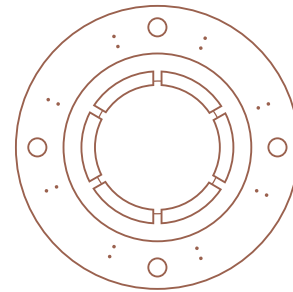
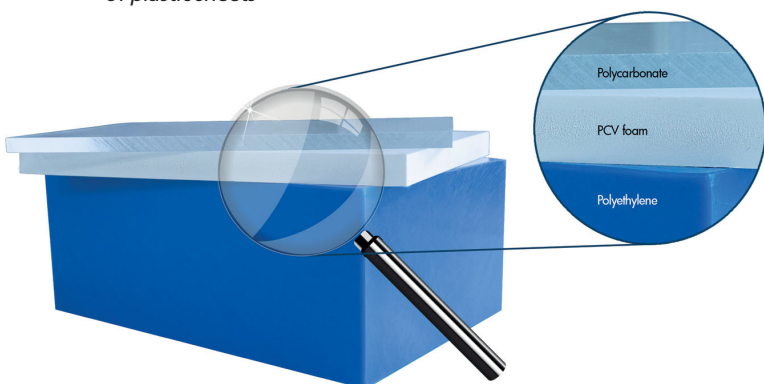
■ During the extrusion of plastic sheets, nothing should be left to chance. The PLANOWAVE 6000 measures on-line, directly after the start-up of the line, the thickness as well as the grammage and density of sheets and thus, ensures the compliance with specifications. It is suitable for the measurement of any type of plastics, for example, PVC foam, transparent plastics made of PMMA and PC as well as common technical plastics such as PE.

The innovative measuring principle based on millimeter wave technology enables the integration of the system at the hot and cold position in the line and, therefore, is predestined for a continuous and reliable quality control of sheets. A transceiver, which is traversing over the sheet, sends and receives frequency modulated millimeter waves. From the runtime difference, the thickness of the sheet is precisely determined, independent of material and temperature of the sheet. A calibration on the material is not needed.

The PLANOWAVE 6000 directly measures through the sheet, making it especially interesting for products, whose material structure does not show homogeneity over the sheet width. This inhomogeneity is shown online by the system.

The measuring values are visualized in real-time and in correlation with the segment width of the dies at the monitor of the processor system ECOCONTROL 6000 and can be used for an automatic thickness control. A graphical visualization with extensive trend and statistics functions are also available. This way, the operator receives a broad overview about the process.

PLANOWAVE 6000 measures the thickness, grammage and density of plastic sheets



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Rotary Extrusion Dies with 2X Increase in Speed

New design of rotary inline or crosshead dies feature speeds to 1000 RPM

■ Guill Tool, a global leader in extrusion tooling technology, announced a new design for its high-production rotary models, both inline and crosshead style. A 2X increase in speed, with models running to 1000 RPM depending on the application, are now available in the Guill line of patented rotating tip & die designs. By rotating the tooling in relation to the material flow, a rotary head increases the wall strength of an extrusion, thereby allowing a thinner wall with less material and the corresponding cost savings for the user. Typical applications for rotary heads include medical and multi-lumen tubing plus various high-end extrusions with interlocking layer or multiple striping requirements.

Features offered on these new rotating extrusion dies include counter-rotating tip & die, co-rotating tip & die, rotating die with conventional tip, rotating tip with conventional die, crosshead or inline, multi-layer, striping, certain profiles and optional quick-change cartridges that minimize cleaning downtime.

By using rotary dies, extruders can realize a cost savings due to the elimination of secondary processes, cosmetic enhance-



ment of the end product with the elimination of weld or parting lines, plus reduction or complete elimination of ovality. Guill Tool offers its new high-speed rotary models as turnkey packages, complete with die cart, tools and all accessories for installation and maintenance.

■ Guill Tool & Engineering
www.guill.com

New Thermoformer Significantly raises Manufacturing Speed and Output

■ SupplyOne Plastics, a leading custom thermoformer based in Reading, Pa., has expanded its manufacturing capabilities and increased production speed and output with the installation of a new GN800 High-Speed Form/Cut/Stack Thermoformer from GN Thermoforming Equipment for the manufacture of food, industrial, and electronics packaging. The increased manufacturing output of the new GN800 thermoformer has directly resulted in the acquisition of between \$1 million and \$1.5 million in new business for SupplyOne Plastics.



“The new GN800 thermoformer opens the door for larger food accounts that have high-volume requirements,” said David Morris, President of SupplyOne Plastics. “This equipment will help us meet growing demand, and further support our customers’ need for speed to market by complementing our quick-turn tooling, design, and production capabilities.”

The GN800 delivers exceptional manufacturing efficiencies, operating at 40-50 cycles/min versus SupplyOne’s current production rate of 11 cycles/min. One of the machine’s first production jobs is a PET food tray which is currently running at 30 cycles/min. The food tray application previously required two shifts a day and two machines to produce the required 67 million packages per year. The GN800 eliminates one machine and one shift, cutting production time by more than 50%.

For high-volume food packaging applications, the new GN800 enables SupplyOne Plastics to install and run more complex tools. The new thermoformer also opens up new capacity, reduces cost, and helps the company become leaner, according to Morris.

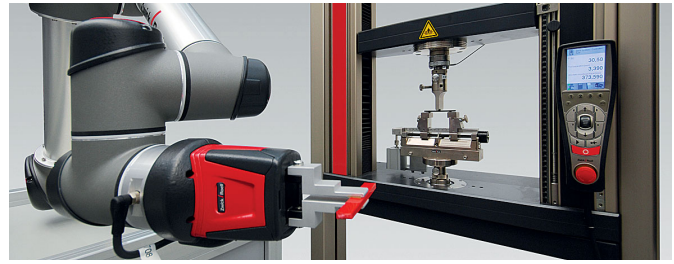
■ SupplyOne Plastics
www.supplyone.com

GN Thermoforming Equipment
www.gnCanada.com

roboTest N – Fully Automated Small Series Testing in the Lab

■ Digitalization, buzzword “Industry 4.0”, is still the main industry topic worldwide. For years, permanently installed robot systems in testing labs have been performing one successful test after another. They relieve qualified personnel from tedious and boring series testing, whether it be 100 specimens or 1000. A ZwickRoell innovation has elevated this concept to new heights: from now on, with roboTest N even small series tests can be quickly and easily automated.

Up until today, constantly changing series with small numbers of specimen could not be efficiently processed with a robotic testing system: both the hardware and software installation was too cumbersome. With ZwickRoell’s roboTest N, the first collaborating robotic system for materials and components testing, even small test series can be processed fully automatically. The Cobot is fully integrated with the ZwickRoell automation software autoEdition 3, and can be used entirely, without a robot operator panel. Special knowledge of robot programming or operations is not required. The roboTest N easily and flexibly supports employees in the testing laboratory with monotonous or time-consuming tests. Integration of individual company specimen magazines that,



roboTest N for sample feeding for a bending test (Source: ZwickRoell)

for example, were manufactured with 3D printing processes, underlines the adaptability of the system and where applicable, extends the workday based on the capacity of the magazine. With its compact, space-saving design, the Cobot is easily implemented in existing testing labs, especially since it does not require complex operator safety measures due to its safe construction.

■ ZwickRoell GmbH & Co. KG
www.zwickroell.com

Commitment to Plastics Recycling stepped up

■ On 3 October, Borealis and Ecoplast celebrated the successful conclusion of a strategic investment at their plastics recycling location in Wildon, Styria/Austria. Ecoplast processes plastic waste from both domestic and industrial consumers into top quality recyclate and now its existing production capacity has been boosted with an ultramodern polyethylene (PE) film recycling line. The new plant improves operational procedures and raises markedly the output of recycled material. It also represents a move that enables Borealis to further consolidate its presence in the plastics recycling field, especially in its home country of Austria.

In August 2018 Borealis acquired Ecoplast Kunststoffrecycling GmbH in addition to mtm plastics GmbH and mtm compact GmbH, one of the largest European producers of post-con-

sumer polyolefin recyclates in Germany. The Ecoplast company in Wildon, Austria, processes post-consumer plastic waste into high-quality recyclate, which is predestined primarily, but not exclusively, for the plastic film market. The current investment was already planned prior to the company purchase.

The investment at the Ecoplast constitutes an appropriate response to rising market demand for recycled material and facilitates a 60% rise in production capacity. This meets the market need for low-density polyethylene (LDPE) recyclate, which is the preferred raw material for film packaging, while securing unchanged top quality levels. With this sizeable capacity increase, Borealis has again underlined its leading position and pioneering role with respect to the furtherance of circularity in the plastics industry.

The new mechanical recycling system employs a fully automatic process for the preparation and comminution of plastic wastes, as well as optimized washing technology and improved near-infrared (NIR) sorting steps. Owing to their differing chemical compositions, the various types of plastic absorb the NIR waves and can therefore be classified with a high degree of homogeneity. This not only reduces the amounts of waste, but also raises yield and permits more economic operation plant operation.

F.l.t.r.: Lukas Intemann, Managing Director Ecoplast; Raimund Woitsch, Managing Director Ecoplast; Ton Emans, President Plastics Recyclers Europe; Helmut Walch, Mayor of Wildon; Guenter Stephan, Borealis Head of Mechanical Recycling (Photo: © Peter Reiter)



■ Borealis AG
www.borealisgroup.com

New Initiative „Choose Plastic“

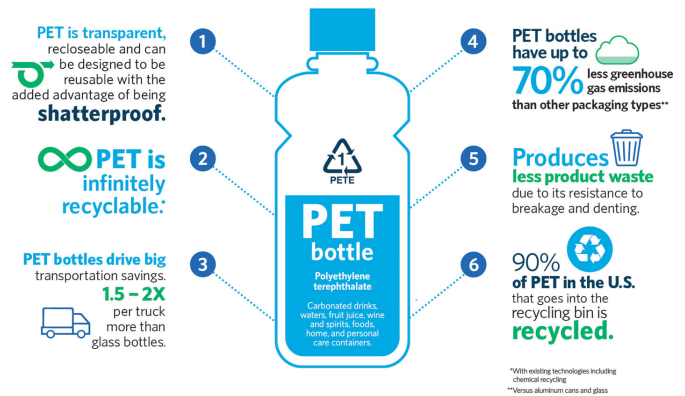
■ With a goal of educating consumers, customers and other stakeholders on the benefits of plastic packaging, Amcor recently launched a “Choose Plastic” marketing campaign. The multi-pronged initiative, which includes a new webpage, an informative brochure and other materials, is designed to:

- Tell the “PET story” with truth, strength and conviction – clearing up common misperceptions regarding plastic packaging.
- Demonstrate where PET stands versus other packaging types, including glass, cans and Tetra aseptic boxes.
- Help customers educate their employees, legislators and consumers on the benefits of plastic packaging.

“Plastic packaging gives our customers a safe, responsible and recyclable way to deliver products to their consumers,” said Eric Roegner, President of Amcor Rigid Packaging (ARP). “PET is infinitely recyclable* and its carbon footprint is less than glass and other packaging materials. But there is still room for improvement, which is why we are working together with our customers and industry partners to boost recycling rates, increase the proportion of recycled content in the plastics we use, and reduce the waste in landfills and nature. Our goal is to create an overall positive impact for all stakeholders.”

Not only are PET bottles and jars lightweight, shatterproof, transparent, recloseable and resealable, studies also show that they are infinitely recyclable, generate up to 70% less greenhouse gas emissions than other packaging types**, require fewer fossil fuels to produce than aluminum cans*** and have fewer transportation costs than glass¹. Additionally, 90% of the PET that goes into recycling bins gets recycled², while only 49% of cans³, 40% of glass² and 16% of Tetra aseptic boxes⁴ get recycled.

Eric Roegner also noted that 97% of Amcor Rigid Packaging’s bottles and jars are designed to be recyclable. The company has



pledged to develop all of its packaging to be recyclable or reusable by 2025.

In addition, Amcor is working with associations such as The Plastics Industry Association, NAPCOR, and The Recycling Partnership to promote plastics, increase recycling rates and drive greater use of post-consumer materials. Amcor is also working with environmental organizations, such as the World Wildlife Fund and the Trash Free Seas Alliance to eliminate plastic waste.

(*with existing technologies, including chemical recycling. **Versus aluminum cans and glass. ***Amcor Life Cycle Analysis 1 Goldman Sachs The Plastic Paradox, 2017. 2 In the U.S., NAPCOR Recycling Report, 2017. 3 <https://resource-recycling.com/recycling/2019/09/17/aluminum-can-recycling-rate-increases-after-down-year/>. 4 Waste Advantage Magazine, May 31, 2019. Breaking Through Misconceptions.)

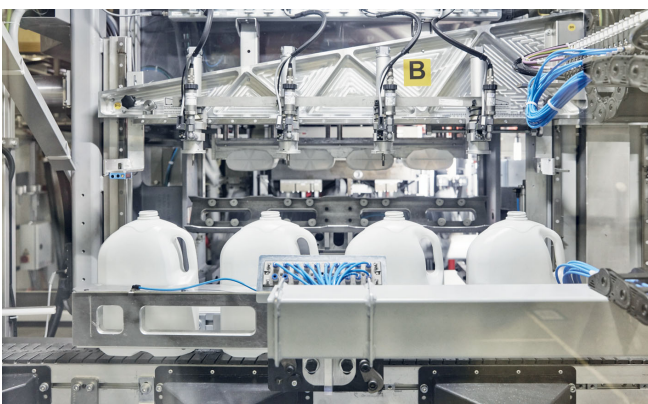
► Amcor
www.amcor.com/chooseplastic

HDPE Recycling – Acquisition

■ ALPLA, the global manufacturer of plastic packaging solutions, is further expanding its recycling activities – it is moving into polyolefin recycling with its acquisition of two companies based in Spain.

With two of its own PET recycling plants in Austria and Poland (PET Recycling Team) and joint ventures in Mexico and Germa-

In the UK, ALPLA uses 13,000 tonnes of rHDPE every year for the production of milk and juice bottles (Copyright: ALPLA)



ny, ALPLA has long been an established partner in the field of PET recycling. These operations currently have an annual capacity of 70,000 tonnes. ALPLA is now taking the next step by buying two HDPE recycling plants.

ALPLA signed the purchase agreements for the acquisition of Suminco S.A. in Montcada (near Barcelona) and Replacal S.L. in Palencia (north of Madrid) in October. Both businesses belong to a Spanish family-owned enterprise with more than 35 years of experience in manufacturing HDPE recyclates. The annual capacity of the plants, which have a workforce totalling 50, will be expanded to 35,000 tonnes. The businesses will continue to operate under the existing management.

To date, a large proportion of Suminco and Replacal’s HDPE recyclates has gone into the manufacture of corrugated pipes for sewage systems and other industrial applications. ALPLA now intends to use suitable recyclates for packaging manufacture.

► ALPLA
www.alpla.com

Recyclability of Plastics Waste while Sustaining Valuable Properties



AddWorks PKG 906 Circle supports packaging film producers in recycling their polyolefin manufacturing waste without compromising the packaging film quality and while also increasing the efficiency of the manufacturing process. (Photographs: Clariant)

■ Through a “Symphony of Collaboration” with partners along the full plastics value chain, Clariant is taking proactive steps in addressing the problem of plastic pollution with new solutions for diverse industry sectors, from packaging – the main use of plastics – to textile floorings and consumer electronics. Complementing its “fit for reuse” solutions announced August 21 where Clariant demonstrated how its additives are recyclable, it now showcases the next level, turning the spotlight on how its additives can make it easier to recycle post-production and post-consumer plastic waste while keeping the material’s performance properties.

Newly-developed AddWorks PKG 906 Circle for polyolefin films is a prime example of enabling plastic packaging producers to achieve some of their critical sustainability and business goals: waste reduction, less consumption of virgin resin, lower costs and increased production efficiency. The addition of this polymer stabilizer allows producers to significantly increase the reuse of waste materials in their polypropylene (PP) and polyethylene (PE) films, recycling their own reground scrap, without any loss of performance or processing efficiency. It is particularly well-suited for biaxially-oriented polypropylene (BOPP) manufacturing but also applicable to cast and blown film processes. With Clariant’s additive, the reuse content of the post-production waste in the final film can be increased by up to 30%. At the same time, the additive is proven to protect the resin so that film quality remains excellent with significant reduction of gel formation and prevention of additional yellowing at same high line speeds. AddWorks PKG 906 Circle contributes to a more sustainable and circular economy by making plastic waste reusable, without compromising the packaging film quality and while also increasing the efficiency of the manufacturing process. This poly-

mer stabilizer is the first Clariant product to carry the ‘Circle’ designator, introduced to highlight new products and solutions which have been specifically designed to deliver significant benefits to the re-use or recycle process.

Although the vast majority of carpets today are made of recyclable woven or tufted materials, most textile flooring still ends up in landfill or end-of-life incineration. This is largely due to the traditional use of a latex, water-based backing which cannot be removed from the pile fibres and creates a difficult-to-recycle material mix. Pioneering collaboration between Clariant and the Fraunhofer Institute – which developed the CreaSolv® Process – removes this obstacle and is a huge step forward for the industry in terms of achieving zero waste targets. Recyclable, EcoTain® certified Lico-cene Performance Polymers (LPP) deliver the benefits of a hot melt carpet backing. By replacing latex with Clariant’s 100% solid content backing solution, water and the associated drying process can be fully avoided, adding up to extensive energy savings of up to 80%, as shown in production trials with carpet manufacturers. As a result, no contaminated waste water occurs. The propylene based LPP can be recovered with at least 90% of its virgin quality for re-use via the CreaSolv® Recycling technology, ensuring a cradle-to-cradle approach. Now, flooring textiles can be recovered and integrated back into production or downcycled into other applications. The whole process provides the missing link for the industry to design fully recyclable carpets from the outset for multi-material, and now also mono-material – a significant contribution to a circular economy for flooring starting from post-consumer waste.

Clariant also offers more additives allowing recycle-use to be increased. On the processing side, high performing lubricants can be added to recycled polymers to improve the flow and mold release properties of recyclates. A recycler of post-consumer electronic waste for example is cooperating with Clariant, using its Licolub® H 12 to modify the recyclate’s rheology at low dosages to achieve melt flow improvement during processing and ultimately help transform components that have reached their end of life into high-quality new products. Clariant is also at an advanced stage in being able to market its compatibilizer range for use in recycling to help overcome the problem of utilizing post-consumer or post-industrial mixed plastic waste streams, so that plastics from plastic-rich waste streams can be efficiently reintroduced into the primary cycle.

■ **Clariant**
www.clariant.com

New President

■ Teknor Apex Company has appointed Suresh Swaminathan as its new president. He succeeds William J. Murray, who is retiring after 41 years with the company. Swaminathan will be responsible for the company’s worldwide custom compounding business. Teknor Apex operates thirteen manufacturing facilities in the U.S., Europe, and Asia and pro-

Suresh Swaminathan

duces flexible and rigid vinyl, TPEs, nylons and other engineering thermoplastics (ETPs), color masterbatches, and specialty chemicals.

■ **Teknor Apex Company**
www.teknorapex.com



Advancement WARP XXL

The system for large pipes up to 3500 mm

Particularly in large-diameter pipe production, significant technical challenges have to be mastered in order to produce large-diameter pipes with uniformly thick walls and smooth surfaces. The iNOEX radar measurement technology is a key technology for measurement and quality assurance

WARP XXL is a highly precise pipe measuring system for wall thickness and diameter measurement of 8 to 32 measuring spots on 4 to 16 axes. The system is based on the latest iNOEX radar sensor technology. The innovative radar chip, the specifically designed lens geometry and the high-power electronics are the core parts of this future-oriented technology. The system supplies exact measuring data and offers a very simple operation.

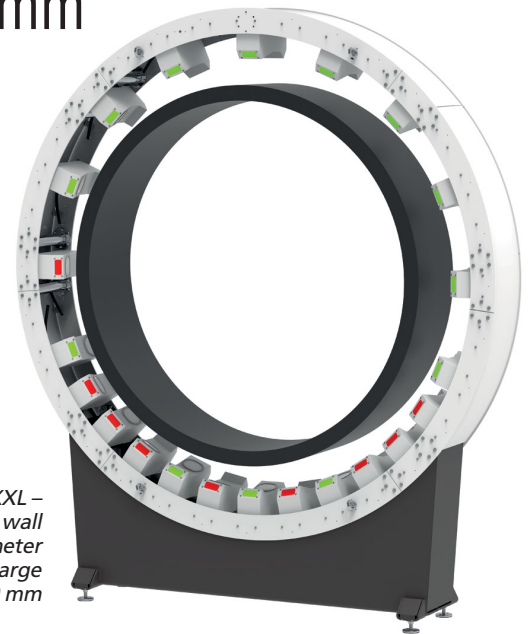
Due to the particularly flexible and modular sensor technology, even pipes that show a strong eccentricity can be measured for the first time. As such, it becomes possible to exactly identify and quantify the occurrence of sagging. Sensors and their measuring spot on the pipe are automatically realigned so that even the smallest variations from set standards become evident. This sagging alarm function implemented early on in the extrusion process offers an enormous cost savings potential.

Further, the number of sensors is flexible which means that the concentration of sensors can be increased in the trouble spots of the process – for example in lower angle positions. Thus, optimum conditions are created

*WARP 100 –
High-Precision wall
thickness and diameter
measurement*



*WARP XXL –
High-precision wall
thickness and diameter
measurement for large
pipes up to 3500 mm*



to centre large pipes early on in the process in order to save materials and costs.

WARP XXL is available for diameter ranges from 630 to 3500 mm. It measures (depending on the material) wall thickness sizes between 5 to 250 mm. All iNOEX WARP systems offer further advantages such as an extremely minimized space requirement in extrusion direction, a user-friendliness and the smart maintenance concepts which can be carried out during the ongoing production process. A complete documentation of the production process in a data bank and the standardized process data interface (OPC-UA) conform to the current state-of-the-art industrial standard.

WARP Radar technology – Plastics measurement of the future

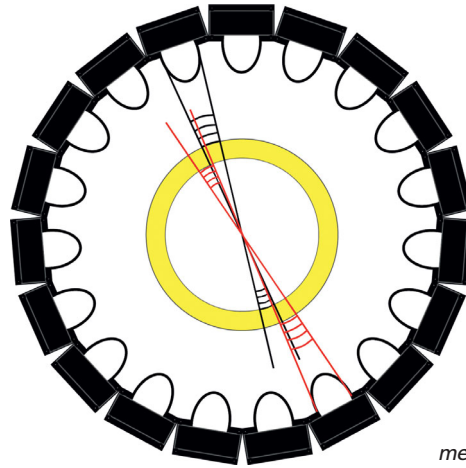
Many have heard of the term radar technology in connection with distance measurement in the automotive or aviation sector. However, the measurement of thin-walled plastic pipes places higher demands on the electronics because a high-resolution capacity is a must when thin layers are measured.

Due to the absence of a suitable product in the market, iNOEX decided to re-invent the core part of radar, the radar technology itself, including the appropriate precision technology and optics, and to adapt the package to the needs of the plastics market. Together with the best experts of the industry, a sensor technology was created that has the right solution for every requirement related to the measurement of pipes.

Radar technology is suitable for all common plastic materials such as PE, L-/HDPE, PP, PA6/-12, PVC, PVDF, etc. without any limitations as to measuring accuracy. The transmission and receipt of radar waves does not require any coupling medium which makes the application very robust, reliable and independent of production variability.

WARP 100 is an inline pipe measuring system for wall thickness and diameter measurement on up to 38 points on 19 axes. More than 1500 measurements per second ensure that a gapless control is carried out on pipes that have to meet with particularly high-quality standards, e.g. pressure or gas pipes, at line speeds of up to 15 m/min. The WARP 100 is available in three sizes and can be used to measure diameters from 90 to 630 mm.

WARP uses static sensors which are aligned around the pipe. They measure the pipe continuously and in parallel. This is called a „real“ 100 % measurement as every spot of the pipe is included in the inspection process, independent of the pipe dimension or the line speed. The specially designed optical unit allows to focus the radar waves on the pipe centre. Sensors are aligned in a way to make measuring spots overlap so that a strict inspection is guaranteed in extrusion direction.



WARP 100 – 100 %
measuring spots overlap

Measured values such as wall thickness, diameter, ovality, eccentricity or process conditions (e.g. sagging) are recorded with high precision, then documented and used for automatic process control. The standardized process data interface OPC-UA offers further advantages for digitizing production.

iNOEX GmbH
Maschweg 70, 49324 Melle, Germany
www.inoex.de



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With the Right Recycling Technology to the Highest Quality

During a visit in Bulgaria at the southeastern edge of the European Union a highly professional and well-organized recycling plant was found producing high quality regranulates that can reach or even surpass virgin material levels. It is the family business “Kaskada” founded in 1990 in Tsaratsovo near Plovdiv. In terms of the machine technology used, Kaskada relies predominantly on systems manufactured by Austrian manufacturers (Artec, Erema, MAS). Their different treatment concepts lead to different results. The highest quality in comparison comes from the MAS cascade extrusion line based on the co-rotating conical twin-screw extruder as the central component



Picture 1: The Bulgarian plastics recycling company Kaskada produces in addition to its distribution business with virgin plastic materials around 12,000 tonnes of high-quality recycled plastics a year, most of which is exported to Western Europe (All pictures: Reinhard Bauer)

In the industrial zone of Tsaratsovo, about 8 km west of the city center of Plovdiv, the second largest city in Bulgaria, there is a large complex with a row of seven modern industrial halls surrounded by

typical storage areas (see Factbox Kaskada). Everything new, well organized and clean, just a company that emerged only after the turn of 1989 and therefore had no unproductive facilities from the commu-

nist central economy to drag on or to get rid of.

The company was founded in 1990 by Kostadin Nikolov, the father-in-law of today's production manager Daniel Nedev as a trading company

Picture 2: The Kaskada business model is focussed on segregated industrial plastic waste, here at the example of ABS-components from the neighboring refrigerator factory



Picture 3: Another processing example of largely uniform industrial waste, e.g. plastic films, of which all types except PET films are processed



for polymers. Parallel to the trading business the company gradually stepped into the recycling of polymers. The first recycling machines were extruders made in Bulgaria and used mills and shredders from Germany. In order to increase the quality of the product, the company made its own developments and improved the machinery and equipment. Since the storage of virgin material and the strongly grown post-consumer plastic quantities and regranulates, including the processing machines exceeded the available space reserves after a short time, Kostadin Nikolov and Daniel Nedev transferred the operation in 1994 at the current location in a business park outside the urban area.

Step by step into the quality niche

Both the virgin and the recycling business grew in the following years. Finally, in all Eastern European countries, including Bulgaria, the major international industrial groups initiated an industrial boom by setting up production branches, pushing the use of plastics. This resulted also in increasing amounts of plastics waste, which attracted a growing number of entrepreneurs. In order to differentiate itself from this competition,



Picture 4: A meticulous material processing by shredding, washing and drying creates the basis for the Kaskada quality granules. There are several preparation lines in operation

Kaskada concentrated more and more on quality.

Daniel Nedev said in an interview: "Unfortunately, the incineration of plastics, which is the simplest solution to the waste problem, is still too often used, but this must become an absolute exception because of the associated air pollution, as well as the associated waste of resources. A similar flaw is the limitation of recycled plastics to the production of garbage bags and other inferior products. We refuse both. Our goal is to prove

that things can get better and plastic waste can be upcycled into competitive, high quality raw materials."

To realize this vision, it took the personal commitment of the company founders and the systematic accumulation of experience. The starting point for this were purchase contracts with industrial partners for the acceptance and processing of their production waste, which can be returned to their production cycle. Kaskada's quality strategy began with the treatment of extruded wastes

Picture 5: The processed film flakes are pre-dried by the washer to the MAS cascade extrusion line, consisting of conical twin-screw extruder, fed filter and single-screw degassing extruder



and extruded sheet products, such as thermoformed refrigerated box housings (Picture 2).

The next step was the launch of the processing of foils and plastic bags of different origin (Picture 3). A trivial finding was that the achievable recycling qualities are directly dependent on the cleanliness and purity of the input materials. In order not to have to compromise on material quality, Kaskada invested from the beginning on in combinations of shredders and washing units. Today, all film and fabric flakes are processed in a washed state, leaving the washing lines with an adherent residual moisture of between 6 and 8 percent (Picture 4). This moisture content needs to be further reduced before the actual extrusion processing.

In an usual recycling-line consisting of a cutter-compacto followed by single-screw extruder this is possible to some extent in the cutter compacto. There the frictional heat generated between the plastic flakes forces a major share of the moisture content to evaporate. Experience has shown that these system produces good results, but not in all cases.

Kaskada CEO Daniel Nedev said: "Since the single-screw extruders are usually run with very long L/D-ratios in the range of 45 to 52:1, the regrind has to travel a very long distance

Picture 7: Kaskada owner and CEO Daniel Nedev demonstrates the high tear resistance and transparency of HDPE films made from Kaskada granules

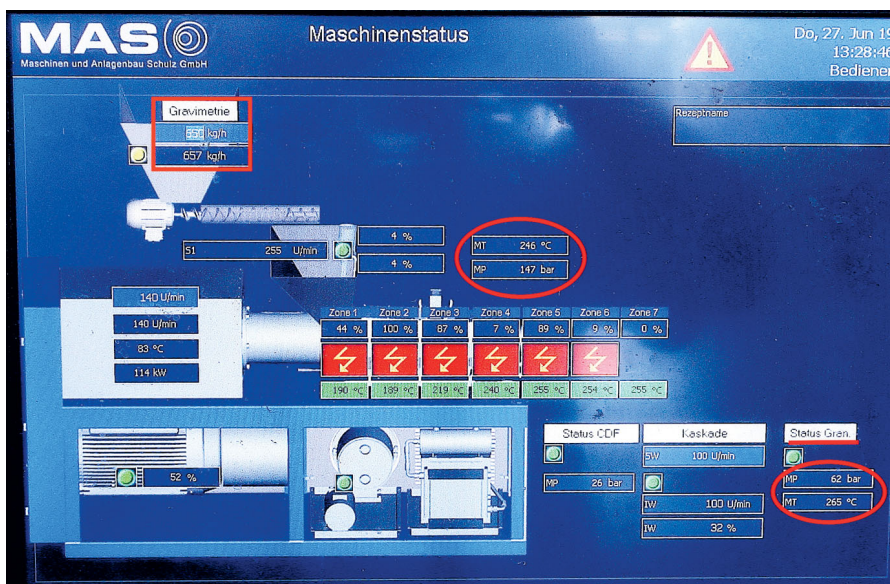


from the feed zone to the granulation station. Due to the following in-line melt filtration this way is additionally extended. The melt temperature increases with the path length. On the one hand by the heat transfer from the cylinder heater, on the other hand by the shearing heat generated by the transverse and longitudinal flow friction in the screw flights. The latter may well be affected by the speed of rotation of the screw, however, to a large extent depends on the specific properties of the polymer. With the usual throughput, the melt arrives at the granulation station with around 40 to 60 °C above

the usual process temperature. Too high to qualify it as gentle processing. As the consequence we end up with material characteristics worse than expected due to a presumable degradation. Although we are able to compensate the degradation effects within certain limits by mixing input material qualities, it is not a satisfactory solution. That's why we started looking for alternatives."

Material protection and quality increase through MAS recycling concept

Daniel Nedev continues: "This alternative was offered by the Austrian



Picture 6: Compared to the cutter compacto / single-screw extruder systems, also operated by Kaskada, the MAS recycling line feeds the plastic melt with a 60 °C lower melt temperature into the granulator, resulting in a less thermally degraded re-granulate



Picture 8: MAS Managing Director Dipl.-Ing. Martin Schnabl, MAS Sales and Application Engineer Eng. Stefan Lehner, MAS-regional sales manager Daniel Pashev, Kaskada-owner and managing director Daniel Nedev and Valeria Nedeva, Kaskada-purchasing officer are working on further increasing the qualities of the recycling machines

company MAS (Maschinen- und Anlagenbau Schulz GmbH). It features a cascade extrusion plant based on the MAS-specific conical twin-screw extruder with co-rotating screws followed by a MAS disc melt-filter-unit and a single-screw degassing extruder and a pelletizing unit. About two years ago, we ventured into this fundamentally different system technology." (Picture 5)

With this system, there is no need for a cutter compactor feeding the film flakes to the extruder. The conical twin-screw extruder, with its system-typical large-area feed opening, offers good conditions for the efficient intake of materials with a low bulk density without having to agglomerate them beforehand. Before feeding the regrind flakes, coming from the washing line, into the extruder, they pass, if required, a MAS drying centrifuge (DRD dry cleaner) where they are dried in a stream of hot air and then conveyed into the extruder via a gravimetric dosing system.

Due to the conical layout the plasticizing section of the MAS extruder is significantly shorter compared with a single-screw extruder and the plasticizing process due to the geometry of the co-rotating twin-screws particularly gentle and less exposed to shear-stress. The shorter melt-path offers in addition to the lower temperature exposure additionally the beneficial side effect of a significantly lower energy consumption for the plasticization. After the conical twin-screw extruder, the melt passes through the likewise MAS-specific, continuously operating

disc filter system on the way to the subsequent cascade extruder with degassing unit. At the end of the processing line, the recyclate reaches the granulation unit after an overall shorter throughput time and with a much lower melt temperature of 160 to 210 °C.

A quantitative comparison between the traditional recycling systems and the MAS cascade extrusion technique results for the specific Kaskada application that the MAS system processes PE-film-flakes with a much lower specific energy expenditure than the other existing recycling-lines (just 0.34 kW/kg at a throughput of 650 kg/h) and converts them into granulates with higher quality levels (Picture 6).

The overall lower shear and temperature load leads to a comparatively higher quality level, which is substantiated by the determination of the mechanical characteristic values. In addition, the most obvious features are the better transparency, the lower yellowing and the lower odor emission, as well as the significantly higher tensile and puncture resistance, clearly demonstrated by the Kaskada boss (Picture 7).

MAS recycling concept pays off

Investing in MAS equipment technology has been financially rewarding for Kaskada. For example, the recycled HD and LDPE-granulates produced for customers who are predominantly in Germany, France, Austria and Spain can be marketed with surpluses of 50 to 80 EUR/tonne, as

the Kaskada boss confirms and adds: "Through selective mixing of input materials whose quality potentials our employees now know very well, we can achieve even higher quality levels. This enables us to raise the quality of the final product to a certain level. This may be even the quality level of virgin material. This is our contribution to increasing the acceptance of recycled materials that would otherwise end up in incineration or landfill."

Working together on the future of recycling

Since proven plant technology also offers room for improvement, an exchange of ideas between MAS and the Kaskada technicians takes place at regular intervals, during which the experiences and wishes from production are incorporated into the machine development (Picture 8). Seen in this way Plovdiv 2019 was not only the European Capital of Culture, but also a "hot spot" of recycling technology.

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Author: Rebecca Zachau, Corporate Communications SIKORA AG

Even smallest metallic contamination in plastic pellets can cause significant problems during the production and processing of plastics. Whether the pellets will be used for the production of injection molded parts, cables, films or profiles – fault prevention almost always means a major effort and even more, when fault correction becomes necessary. The dismantling of injection molding tools, the exchange of hot runner systems and the reworking of cavities is time consuming as well as expensive

Caption 1: Metal inclusions in plastic pellets, caused by a damaged extruder during material production



Automated Sample Inspection and Detection of Metallic Contamination in Plastic Pellets

At K-SHOW 2019, Tecnomatic will exhibit one extruder and two die-heads, part of its innovative range of products and will introduce the customers to the current industrial revolution, known as Industry 4.0

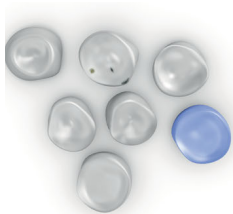
Focus on Industry 4.0

An innovation which will change the future and it's already changing the present is definitely "INDUSTRY 4.0", which is becoming increasingly important and is involving more and more factories. Industry 4.0 plays a strategic role in coordinating, synchronizing and analyzing the machinery's process, as well as supplying very important data to the human operators. Therefore the production process will be

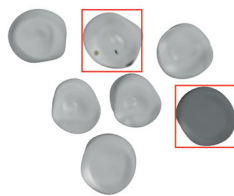
more accurate and will make the human operator's work easier.

TECNOMATIC at K-SHOW will introduce customers to its system aimed at supporting the new digital industrial revolution, providing to the plastic pipes manufacturers a complete and integrated portfolio of products, solutions, industrial software and automation technologies.

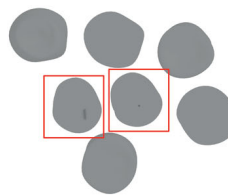
The system provides a simple user-friendly program for the networking of extrusion pipes lines. Via the machine's EPC (Extrusion Process Control) system, several machines and peripherals are connected and linked together to be operated via a uniform user interface, which enables interaction between the individual appliances. In this way, the entire



Plastic pellets
with contamination

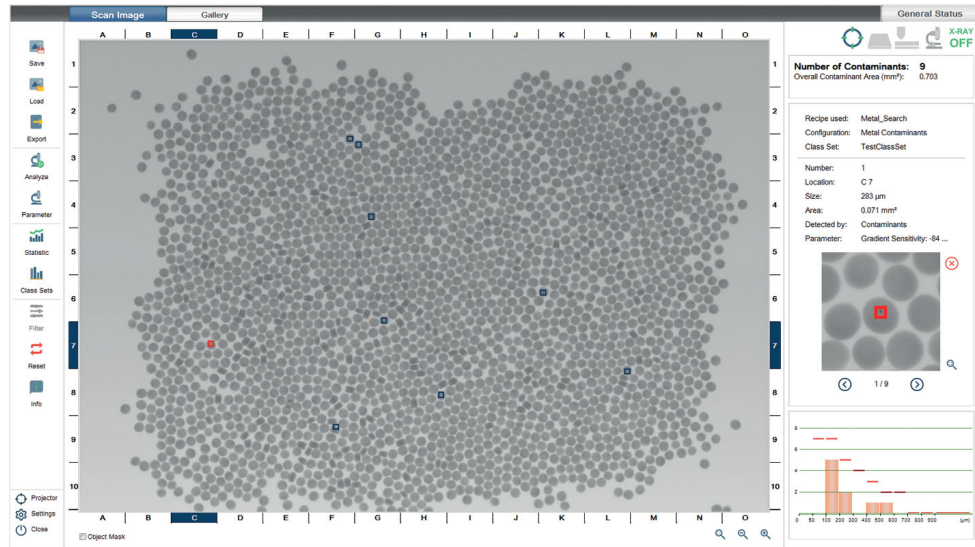


Contamination detected
by optical camera



Contamination detected
by X-ray camera

Caption 2: Examples for plastic contamination (left): With an optical camera contamination are detected on the pellets' surface as well as discolored pellets (middle). With an X-ray camera, metallic contamination are detected inside pellets (right)

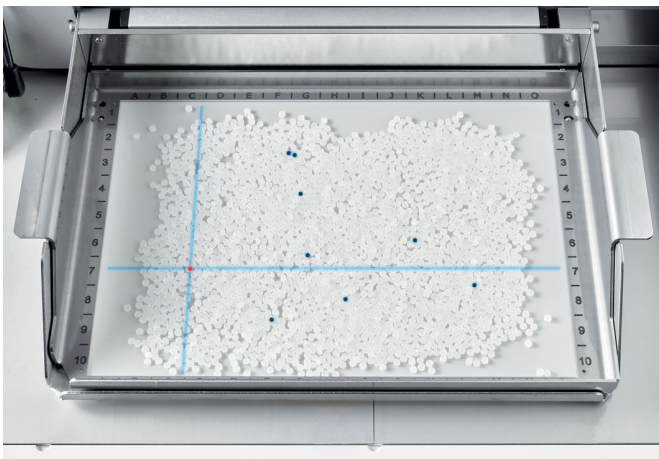


Caption 4: X-ray image of pellets on monitor: Detected contamination are highlighted in color and shown enlarged

manufacturing process, including material feeding, temperature control and synchronisation is coordinated and tracked. Another important point is having all parameters centrally recorded and monitored. The system allows, not only to carry out energy monitoring, but to convert numbers and data into valuable information on the processes within the line. This enables optimal analysis of a line's performance. From the relevant key performance indicators (KPI) for shift supervisors up to the clear presentation of the line performance for the management. Perfectly in line with the concept of "smart factory" of the Industry 4.0, all data, including preventive maintenance and service parameters or alarms can be monitored via internet or intranet, to Pc, servers or to mobile devices. The investment on Industry 4.0 brings about many advantages as:

- Higher flexibility and efficiency of the extrusion line through a reduced set-up period, reducing errors and downtime

Caption 3: Sample tray with material samples: Detected contamination are highlighted in color. On the monitor, selected impurities are visualized on the sample tray by cross hairs



- Possibility of big data collection and analysis to optimize the processes
- The above are just some of the many pros of having extrusion plants, which are operating with Industry 4.0 technology and therefore TECNOMATIC is focusing and investing on it. This will enable TECNOMATIC to supply its clients with the most efficient extrusion lines available in the market.

Extruders & Die-Heads

Further to an extruder of the ZEPHYR series Tecnomatic will also display die-heads of the VENUS series, to produce PP-R pipes with fiberglass up to 250 mm, and of the VENUS COAT series for the coating of PE or metal pipes with protective or functional layers. ZEPHYR is the most performing extruder manufactured by Tecnomatic, it features an array of advanced technical solutions which makes it ideal and suitable for pipe producers looking for even more focused energy saving machines, offering extreme output performance at lower melt temperatures. The innovation spans the entire extruder and includes new spiral grooved bush, screw and motors. Pipe extrusion is highly dependent on electricity and most of the energy usage is in operating the extruder itself. The Zephyr series has been designed by focusing on this as a priority, in fact the extruders of this line feature increased screw length and AC water-cooled motors, to ensure same output of bigger size extruders but with a better energy efficiency. The new feed bush ensures minor friction, commonly generated by raw material transport, with subsequent increasing of the specific and total throughput. The further development in screw design, with optimization and enhancement of torque and shearing elements, have improved the output but have also led to process the material at lower melt temperatures. In a market, which is always more and more looking for highly innovative development, with respect to the grow-

ing improvement of material properties, single-layer pipes are not always able to fulfill the necessary requirements. Tecnomatic has well interpreted these customer needs and has developed, on the basis of the VENUS concept, a full range of die-heads for the production of 2, 3 or 4 layers polyolefin pipes even in big size.

The VENUS MULTI pipe heads have implemented important technological features in order to reach the best pipes processing and to fit a wide range of materials at very high output. The spiral geometry has been especially optimized for the latest generation of PE and PP raw materials, while length, volume and pressure have been reduced. The heart of the VENUS MULTI consists of an innovative flow channels geometry, which has been calculated by considering the current raw material. This geometry assures the same behaviour for pressure and distribution of the melt, in every pipe head of the range, also at very high output rate.

The new feeding system of the spiral channels, as well as for the matching ranges and the small die sets contributes to reduce the working pressure. This influences remarkably energy consumption during extrusion taking into account that approximately 5 to 10% of the extruder power is necessary for the pumping capacity. Lower pressure also results in a lower increase of the melt temperature and with lower residence times assuring improved pipe's characteristics with regard to OIT (oxidation resistance) values, extra weight and thermal and shear stresses reduction.

Coated Pipes

The inherent flexibility of polyethylene has enabled a wide range of techniques, including thrust boring, directional drilling and pipe bursting, to be used to install polyethylene pipe systems. Multilayer pipe systems have been developed with the specific objectives of improving the protection of the pressure pipes during such installations and to maximize the quality of the pipe system. This pipe, with

a peelable outer skin, has provided significant economic and environmental benefits in water distribution pipelines and it is currently being tested and introduced into the Gas distribution networks. The jacket is made of a specially modified polypropylene material, which protects the surface of the inner pipe against potential notches and cracks generally associated with demanding installation methods such as pipe bursting or wash-boring. Even extremely deep notches in the protective jacket will not be transferred to the inner pipe when it is eventually exposed to service-related stresses. The core pipe is instead made from PE resins. The dimensions of the core pipe match those of standard solid wall PE pipes. "Adhered" to the outer wall of the PE core pipe there is a tough skin, which is typically 0.6 to 0.7 mm thick for all current dimensions of this new multilayered pipes. The "skin" is added by a cross-head positioned before the last cooling bath.

To fulfill the needs of coated pipes production with protective layers, Tecnomatic has developed a full range of die-heads, based on spiral or radial technology suitable for both plastic or metal pipes coating with range from 5 to 800 mm, and solutions up to 4 layers. The die-heads are based on a typical spiral technology for large and single layer co-extrusion, while combined solutions with radial distributors or short path spiral are offered according to material characteristics or volume as for PA, EVOH, PVDF or adhesive bonds.

¹ Dr. Frank, C., Röntgen- und Kameratechnik kombinieren. Inspektion, Sortierung und Analyse von Kunststoffpellets, Plastverarbeiter, Edition 10/2017, p. 116-120

SIKORA AG
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www.sikora.net

Caption 5: The X-ray based offline inspection and analysis system detects metallic contamination in plastic pellets



Plastic Additives improve the Manufacture and Functionality of Underwater Cable Sheathing



Siechem Wires and Cables, a leading manufacturer and exporter of marine and shipboard cables in India, has developed underwater cables using a tailor-made BASF plastic additives package, comprising of an antioxidant from the Irganox® range and light stabilizers from the Chimassorb® and Tinuvin® ranges. The additives play a crucial role in stabilizing the production process and extending the service lifespan of underwater cable sheathing

“The plastics industry requires plastic additives to achieve the desired properties and performance of their products in specific applications,” said Hermann Althoff, BASF’s Senior Vice President, Performance Chemicals Asia Pacific. “Our plastic additives enable a wide range of plastic applications to remain extremely durable and withstand natural elements better, as the underwater cable example demonstrates.”

Modern deep-water fiber-optic cables comprise several pairs of hair-like glass fibers, a copper power conductor and steel wire strength membrane, which are all sheathed in high-density polyethylene (HDPE). Siechem uses the electron beam (EB) cross linking process to create the HDPE coverings used for high performance wire and cable.

The process of cross-linking plastics with high energy electrons is used to

improve thermal, chemical, barrier, impact and other mechanical properties to meet the demanding applications of the customers in the wires and cables business.

Incorporating antioxidants and light stabilizers optimizes the polymer for more efficient cross-linking and improved durability during service life. BASF’s plastic additives solution is added to the resin to reduce color formation and to provide processing stability during the pelletization and extrusion processes. In this way, the polymer is protected both during the processing step and throughout its service life.

► BASF Plastic Additives
67056 Ludwigshafen, Germany
www.plasticadditives.basf.com

The market launch of AllRoundDia DualVision is PIXARGUS' answer to the market's demand for cost-efficient 360° inspection of round product. This two-in-one system of extremely compact design measures and inspects tubing, tubes or cables with a 100% defect detection rate. Also regarding the price, this smart defect detector can score points

AllRoundDia DualVision – the first single system performing complete 360° contour measurement and surface inspection of round product at the same time



First Single-Unit System Performing Complete Contour Measurement and Surface Inspection at the Same Time

AllRoundDia DualVision (DV) combines PIXARGUS' vast know-how and expertise in an ideal way: the hardware and software of PIXARGUS' highly successful ProfilControl 7 technology have been optimized and adapted to the measurement of product of simple, round contours. The result is a small-budget system that measures both the surfaces and

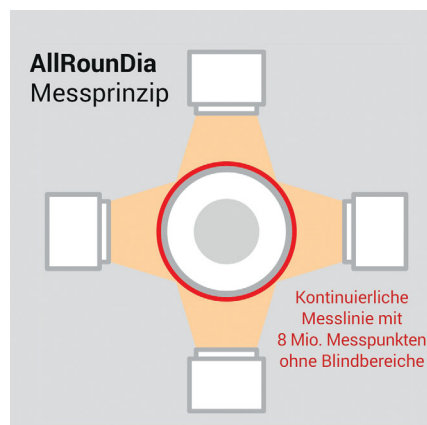
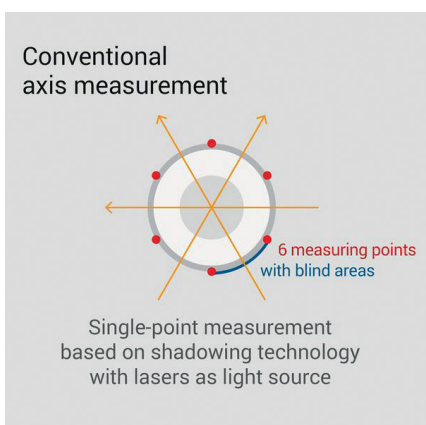
contours of tubing, tubes and cables gaplessly, continuously and around the complete circumference of the products – with one single sensor head. A real novelty! An additional advantage of the new two-in-one gauge is its extremely compact design, which makes it very easy for operators to integrate the system into their production lines. "Reduced to

the max": this is how the PIXARGUS experts call this design approach. They are convinced that the new system will make a lasting contribution to the quality of round products.

Measurement of dimensions: All-round instead of nodes measurement

AllRoundDia DV is the first gauge to deliver gapless 360° measurement of round and oval contours. PIXARGUS achieves this by employing a camera-based, laser-triangulation method. While conventional axis-based measurements using the shadowing method (see illustration) cover only six single points, the optical sensors of AllRoundDia DV capture 8 million pixels. PIXARGUS Managing Director, Jürgen Philipps, knows: "Each individual point can be decisive for the quality of the product." Although the single-point method measures each single point very accurately, it does not capture the area between the points and detects only defects of relatively large topographic extension (nodes). "This can be illus-

In contrast to conventional (6-point) axis-based measurements, the optical sensors in an AllRoundDia DualVision gauge capture 4 million pixels, guaranteeing gapless inspection around the complete circumference without any dead zone effects



trated quite simply by the following example: Let's take a defect of 1 mm size on a product of 10 mm size. Inspecting the product at only six spots would leave 90% of the surface uninspected. AllRoundDia DV, on the other hand, guarantees that each and every point is inspected with the same high reliability and repeatability," explains Philipps. "This is gapless inspection in the true sense of the word," he adds."

Surface inspection: fissures, necking, flecks, etc.

AllRoundDia DV continuously checks not only the contour for any deviations from the target, but the entire surface area. The PIXARGUS system employs "true" LED lighting, not laser light as conventional systems do. The specially developed lighting concept ensures that the field of vision and the measuring field are perfectly homogeneously lit. Precisely for this

reason, even difficult to detect irregularities and flaws in the material such as fissures, inclusions, flecks and other high-contrast defects from a size of only 0.1 mm are reliably captured. Cable manufacturers employ spark tests as final quality control of the cable insulation. Here AllRoundDia DV has set a new benchmark: it detects porosity or spots of insufficient material thickness at a much earlier stage in production – making 90% of the spark tests superfluous.

1+1 at an extremely small footprint

AllRoundDia DV's extremely compact design enables it to be ready to run in the production line with virtually no effort at all. The system comes with a straightforward and intuitive HMI. It can be operated either directly via its display or remotely via a tablet. This highly compact "allrounder" handles round products with diameters of up to 40 mm. It is available as a stand-

alone unit or mounted on a stand base.

With all common interface ports and ready for Industry 4.0

As a Windows-based system, AllRoundDia DV comes with all common interface ports and is easily integrated into corporate network structures. But AllRoundDia DV has even more to offer: The two-in-one system can be networked with additional sensors and measuring systems and integrated – horizontally and vertically – via an OPC UA interface, for example, into innovative Industry 4.0 applications.

PIXARGUS GmbH
Monnetstr. 2, 52146 Würselen, Germany
www.pixargus.de



ZUMBACH Electronic, a leading manufacturer of non-contact measuring technologies for the plastic and cable industry, is extending the existing and well-established PROFILEMASTER measurement system range with two new, advanced systems. The new PROFILEMASTER PMM 130 and PMM 160 are technological advancements and offer a higher measuring frequency, extended measuring field and improved precision. The proven light-section measurement principle used in PROFILEMASTER, enables a fast and complete acquisition of the contour to be measured



PROFILEMASTER® PMM 160-6K

PROFILEMASTER® – Complex Shape Measurement Made Easy

In the design of the measuring frame, emphasis was placed on simple and practical handling. Therefore, the system can be easily inserted into a running extrusion line. The angle adjustment integrated in the measuring frame also enables an ideal positioning of the camera / laser modules to the profile, which results in improved contour coverage. The open and accessible concept also simplifies maintenance, even during operation.

With the two new PROFILEMASTER PMM versions, a multitude of profiles can be measured. The PROFILEMASTER

PMM 130-4K has a measuring field of 130 mm with four camera / laser modules arranged around the product, from these the contour is captured and measured.

The PROFILEMASTER PMM 160-6K has a measuring field of 160 mm and offers six camera / laser modules. Thus, even complex profiles can be fully captured and measured.

The long-proven PROFILEMASTER user interface is also used with the PMM 130 and PMM 160. With ease, new profiles can be added using a DFX drawing or a pre-made template, and all important measurement points can be defined. The clear display reveals all relevant information about the product and process at a glance and helps to optimize production profitably.

With a measurement frequency of up to 200 complete contours per second, all defined dimensions, radii and angles are precisely measured and monitored. This high measuring frequency makes it possible to monitor and record the production process better. Short-term changes and variations become visible, making the production process as transparent as never before. All measurement data are collected and used for statistics and SPC data (Statistical Process Control).

The digitization process of Industry 4.0 is also supported by the PROFILEMASTER. With the OPC UA protocol, the communication protocol of choice of Industry 4.0, the PROFILEMASTER can be easily integrated into industrial automated solutions. The exchange of data is therefore easily achievable.

PROFILEMASTER Main Screen



ZUMBACH Electronic AG
P.O. Box, CH-2552 Orpund, Switzerland
www.zumbach.com



Innovative Solutions for an Evolving World

Key DuPont exhibits and the company's commitment to a collaborative and innovation-driven approach are the major highlights in our interview with Jeroen Bloemhard, Global Vice President at DuPont Transportation & Industrial

Mr. Bloemhard, please tell us about DuPont's focus at K 2019.

Jeroen Bloemhard: Discovering DuPont, the theme we're showcasing at K 2019, demonstrates our vision of transforming industries to improve people's lives and empower the world. Three universes – Advanced Mobility, Enabled Connections and Smarter Healthcare – are our main focus at the world's leading trade fair for the plastics and rubber industry in Düsseldorf.

The automotive, electronics and healthcare industries are key areas where we believe we can make an impact through our collaborative and innovation-driven approach to help people and economies thrive. All three industries are going through major changes.

The automotive sector is transitioning from internal combustion engines to electrification. DuPont has a longstanding automotive heritage that we are proud of, and our applications expertise and materials capabilities enable us to help meet the industry's emerging needs. Key challenges for electric vehicles include lightweighting, thermal management and NVH. We help address lightweighting by replacing metal parts with plastic ones. Another aspect we are involved in is thermal

management. Because of the heat generated by batteries, it's important to take this into account when developing materials. Additionally, NVH, or noise, vibration and harshness management, is another critical area. With electric cars passengers no longer experience the noise from vehicles with traditional engines, which means you are aware of other sounds that you would not normally notice.

The electronics industry has been facing challenges in miniaturization and safer connections. At K 2019, within our Enabled Connections umbrella, we demonstrated our broad portfolio of solutions for high-performance applications for connectors, wire and cables, electrical components and consumer electronics which are essential for the development of the electrical and electronics market and associated smart connection technologies.

The healthcare industry is also undergoing a significant transition from a focus on taking care of illnesses to preventing them. Going from a "sick-care" to "well-care" focus is ideally suited for DuPont's healthcare material solutions and expertise, including technologies for medical devices. DuPont is helping improve the patient experience and compliance by enabling safer, more convenient and



more effective diagnostics, monitoring and treatment.

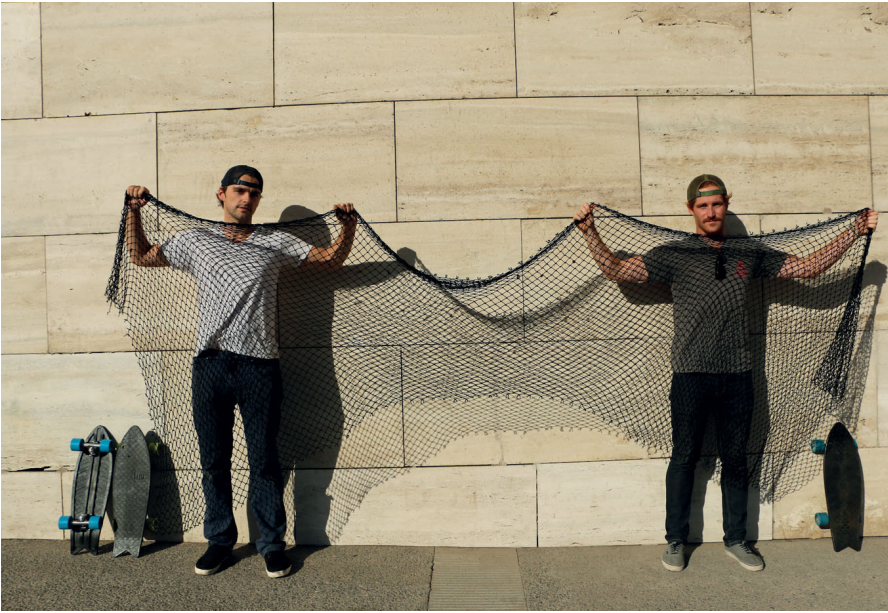
What helps DuPont keep being a global innovation leader?

Bloemhard: DuPont is a technology-based, materials science company. We work at the intersection of chemistry and material science so that we can help develop the technology and applications that our customers need. Our expert applications development teams are key to developing these solutions, and we are continually inspired by our customers' feedback to create innovative solutions for an evolving world.

Our vision is to help transform industries to positively impact society and ensure the well-being of consumers. We are excited knowing that so many of the innovations currently around us today are enabled by DuPont.

Thank you for this interview!

DuPont
www.dupont.com



“We want to do something about the garbage on the seas”

Interview with David Stover, co-founder and COO of Bureo



Bureo is a US company that turns old fishing nets into new products such as skateboards. How did you come up with fishing nets as a start-up?

David Stover: If you look at the plastics problem as a whole, it is estimated that plastic fishing nets account for between 10 and 40 percent of marine pollution caused by old plastics. That’s a significant proportion for just a few types of garbage. We at Bureo want to do something about the garbage on the seas and have therefore chosen the fishing nets. So far, there has hardly been any consideration of what to do with the nets that can no longer be used. We consider fishing nets to be one of the most harmful forms of plastic waste for the maritime environment.

How does Bureo collect the end-of-life fishing nets?

Stover: We operate in Chile with our company. There we started to set up large recycling buckets in the

ports. A kind of garbage can, where the fishermen could get rid of their old nets. This works in some places where it is well managed. But the situation varies from port to port and from fishing company to fishing company. Then we realised that instead of waiting passively for the garbage cans to fill, it was better to actively approach the fisheries. Today we are receiving information from the fisheries as to which nets are old and when they are to be phased out.

Does Bureo pay for this?

Stover: Yes, because the financial incentive means that fishermen do not regard the old nets as waste, but as a business opportunity. We pay the fishermen, collect the nets, recycle them and return them to production.

Does your example set a precedent elsewhere?

Stover: We are expanding in Chile and beyond. We are now talking to fisheries in the north and south of the country and neighbouring countries. We are also in the process of setting up a project in Peru and are also negotiating with the relevant authorities in Argentina and Ecuador. The volumes that we collect and process are growing all the time. But our radius remains rather local. If you look at the amount of old nets that we recycle each year, it becomes clear that we certainly do not yet have much influence on the big problem of plastic waste. But we are showing a way to change the way fishermen deal with nets.

How can the problem be tackled globally?

Stover: Because littering with old fishing nets is a global problem, we are in contact with groups that want to tackle the problem globally. For example, we are a founding member of GGGI, the Global Ghost Gear Initiative. In this working group, all parties involved in the issue are looking for possible solutions that can be applied everywhere. Another very

important point for us is education. We show fishermen and fisheries that there are ways to avoid pollution.

How is the USA dealing with plastic waste?

Stover: My observation is that we are safely behind the EU there. In some places and regions, such as New York City or California, there are a number of great initiatives. In California there will soon be a law requiring manufacturers of plastics and plastic products to invest in recycling. At the local level, there have been many bans on disposable products. So there are a few good initiatives, but as a country, the US has a problem dealing with its own garbage in a sensible way. For a very long time, we have relied on the fact that we can simply export our plastic waste. Recycling is currently still very inefficient in the USA. Even of the waste that is collected, only part goes for recycling because the other part cannot be recycled at all. The infrastructure and certainly also the technical possibilities are inadequate. Basically, we will have to change the way we use, process and recycle material, and we will have to change it globally.

Do you need political guidelines to get recycling rolling, as in the EU?

Stover: That would certainly be good, but in the current political situation in the USA this is very unlikely. We are convinced that consumers can put pressure on companies to design their products better and produce more sustainable products. But that only works up to a certain point. Consumers don't want to give up their convenience, they want everything at the lowest possible price and the companies that produce such products don't want to get away from plastic because it's cheap for them. What is really needed, therefore, is regulation by politicians, including at local level. Companies must be influenced and punished if they do not comply with the regulations. The multinationals in particular have so far often shirked their responsibilities.

But many of these companies have set themselves ambitious sustainability targets.

Stover: It's true that pressure is exerted on these companies from outside. After all, no one can hide the images of the littered seas and hide our waste crisis. These companies have now started initiatives and are setting themselves goals for the next few years. That's a good start, but you have to keep the pressure on. On closer inspection, the initiatives and plans of these companies are quite small compared to their size. Some are ambitious, but for many it doesn't matter much. I think we need to increase speed and scope significantly. The plastics industry produces more plastic every year. If we actually used as much recycled material as everyone promises, we would see a decline in the production of new plastic.

Thank you for this interview!

Bureo
<https://bureo.co>

VDMA e.V.
Plastics and Rubber Machinery
kug.vdma.org





K 2019 gives a Clear Signal for Responsible Handling of Plastics

K, the leading global trade fair for the plastics and rubber industry, has drawn to a close in Düsseldorf after eight days (23 October 2019). The 3,330 exhibitors from 63 nations proved impressively: plastics continue to be an innovative, indispensable, future-oriented material. But they also unanimously underscored the necessity of having operational circular economies along the complete material chain and to this end already presented concrete solutions. Companies struck a nerve with people with this focus because the approximately 225,000 visitors from 165 countries took great interest especially in recycling systems, sustainable raw materials, resource-saving processes. Furthermore, K 2019 was characterised by a high propensity to invest as before. The intention among the international trade audience to get perfectly geared up for the future with the latest technologies was clearly perceivable.

"K 2019 came at precisely the right point in time. Its enormous importance for the sector is underpinned by its high acceptance levels all over the world. There is no other place the industry is represented so internationally and completely as here in Düsseldorf every three years," says Werner Matthias Dornscheidt, President & CEO of Messe Düsseldorf, and explains: "Especially in times of great challenges, a platform like the K is indispensable. It provides guidance and perspectives, sets sustainable economic impulses, shows forward-looking trends and concrete approaches. The industry and its professional associations enjoyed the unique opportunity here to present sector-specific solutions and debate questions of socio-political relevance on a global scale. And they have capitalised on this opportunity outstandingly well."

The nations especially well represented on the part of visitors after Germany were Italy, the Netherlands, India, Turkey and China, followed by the USA. Furthermore, a



marked increase in the number of trade visitors from the Russian Federation, Japan and Brazil could be registered. The number of executives among K visitors rose slightly yet again: to the tune of 68% came from top or middle management. With over 90 percent, visitor satisfaction was again at a top level. While for German trade visitors increased efficiency ranked first as the currently most important issue, the expansion of product and service portfolios was in the foreground for European and non-European trade fair guests.

The extensive supporting programme at K 2019 boasting keynotes and high-calibre discussions such as on renewable energies, material efficiency or zero-waste production met with avid interest among the international audience, especially the Special Show K 2019 "Plastics shape the Future". This year the innovative power of the material and the industry in terms of resource-saving processes, digitalisation, functionality, renewable energies, circularity and sustainability were centrestage. And such critical themes as marine litter, the throw-away mentality associated with plastic packaging and the use of finite resources for their production were not ignored either.

At the Science Campus both exhibitors and visitors to K 2019 were given a condensed overview of scientific activities and results in the plastics and rubber sector. Numerous universities, institutes and funding agencies provided opportunities for direct dialogue.

The next K Düsseldorf will be held from 19 to 26 October 2022.

► www.k-online.de



The Getecha stand in hall 9 at K 2019 (Photos: VM Verlag)



Individual Variety with High Degree of Automation

Getecha is consistently becoming a system integrator for the realisation of complete solutions for the granulation and reprocessing of plastic waste close to production. At the centre of these largely automated systems are always project-specifically configured hopper and infeed granulators from the rotary cutter machine range. At this year's K, the company showed some of these customer-oriented granulators for the granulation of processing waste from the injection moulding and blow moulding technology.

The GRS 180 with a highly compact design is a beside-the-press or central granulator which was designed for setup in production environments, subject to strict hygiene and cleanliness requirements. It granulates up to 35 kg material per hour and releases almost no particles (<1.0 µm) due to its integrated extraction system as well as optimised sealing technology. The GRS 180 is visually striking with its low-height design and a total height of only 1,050 mm. It is therefore ideally suited to the space-saving positioning below drop chutes, separating drums or large injection moulding machines. As standard, it features an extremely flat special hopper with automatic dual slide valve for feeding of sprues and scraps without splash back. This gateway function can be adapted to three different cycle versions by means of a toggle key and an integrated easy control. The GRS 180 can also be loaded with sprue pickers from the Getecha range. The RS 2404 B, which Getecha showed at its K trade fair stand, is adapted to

use in blow moulding technology and designed for an hourly throughput of up to 160 kg. Managing Director Burkhard Vogel explains the most recent optimisations made to this hopper granulator on the occasion of different customer projects: "On request of the users, this granulator received a strong 7.5 KW drive, an open triangular rotor permeable to air with 3 x 2 rotor blades in offset arrangement and a super tangential housing feed. This way, it is ideally equipped for the granulation of large-volume blow-moulded parts like for example 5 litre bottles." Furthermore, fans integrated into the hopper of this RS 2404 B cause an additional air flow in the grinding chamber and make sure that the spray arresters remain tightly closed, so that no ground material can splash back.

The largest exhibit was the powerful central granulator RS 45090. It is designed for an hourly throughput of up to 900 kg and has a granulator housing with highly effective sound insulation. Due to its drive repositioned at the top and integrated into the housing, it is relatively compact despite its additional insulation, and only requires a small footprint. Getecha demonstrated in Düsseldorf how this granulator can be turned into a multi-tasking-capable granulation station by means of various bypass hoppers. Because on the one hand, there are infeed rollers at the rear of the granulator for pulling in entire sheets and blanking skeletons, on the other hand, users can also feed their faulty parts via the hopper.

An important prerequisite for the high performance of this large central granulator is, in addition to the robust machine static, a powerful 5-blade rotor and the usage of two stator blades in the grinding chamber. The RS 45090 also sets standards with regard to maintenance: A hydraulic opening mechanism supports easy access to hopper and screen rocker, and an electrically monitored rotor locking provides highest safety during routine blade replacements.

Also striking at the K trade fair stand of Getecha was the equally sound-insulated infeed granulator RS 3004-E. The technical highlight of this machine, which was developed for usage in film and plate extrusion, is the torque-controlled double infeed system. It enables offcuts and edge trims of varying thickness to be fed in at different speeds. A mechanical floating roller control system with dancer arm provided this function for many years, synchronising the speed of the edge trim feed with the speed of the film system and controlling the tensile load of the edge trims. However, as the edge trim granulators are now often to be installed directly next to the extrusion system, where the footprint is often very limited, Getecha developed a new, more compact system: Here, the maximum torque of the feeding drive is set via the frequency converter, and the traction and infeed speed working on the edge trims are finely tuned.

Getecha GmbH
www.getecha.de



Automation of Extrusion Lines

As a market-leading company for adjustable calibration sleeves, CCA cares for the automation of plastic pipe production with long-term experience and know-how. Each calibration sleeve is developed to precisely match the individual production requirements. The results: increased product quality and cost-effectiveness.

New: Adjustable calibration sleeves with motor control

The CCA supply range includes calibration sleeves with 1-, 2- or 4-point adjustment as well as conventional sleeves. At the K 2019 in Düsseldorf, Germany, the world's largest trade-fair for plastics and rubber industry, the latest innovation of the company based in Löhne, Germany, has been presented: Adjustable calibration sleeves with motor control – available with 1-, 2- or 4-point adjustment. CCA offers these motor-controlled sleeves starting from an outside diameter of 280 mm up to 2.600 mm. They are equipped with pneumatic actuators made of sturdy stainless steel and provide the proven functional and operational safety like all CCA calibration sleeves.

For interested customers a starter kit consisting of motor(s) and control – on request by means of a touch panel – is now available. This starter kit can be used for several calibrators. For changing the motor(s), CCA promises an easy handling.



A further special feature:

The calibration sleeve with 4-point adjustment allows the adjustment of both the pipe diameter and the ovality. Here the motors can be controlled individually or combined (top / bottom resp. right / left) – a currently unique solution in the market ensuring once more CCA's highest standards.

CCA GmbH
www.ccagmbh.de

Innovation Lab

CPM Extrusion Group presents its newly designed state-of-the-art laboratory, located in Extricom's fa-

ility. A wide range of processes on a downscaled extruder dimension can be live-tested with the custom-



ers. The Innovation Lab contains four different co-rotating extruders; RE 3 XPV 37L/D or 55 L/D, CXE 45 L/D ratio of 48, RXT 35 L/D ratio of 48 and RE1XPV 34L/D or 100L/D.

Making CPM Extrusion Group the only company to test twin-screw extruder and RingExtruder in the same location in collaboration with their expertise, knowhow and a large range of equipment on site. This innovation playground mitigates risks and fosters product development by the engagement of the customers' R&D expertise and Extricom's R&D, service and laboratory team, allowing them to find the optimal costs-benefit solution.

EXTRICOM EXTRUSION GmbH
www.cpmextrusiongroup.com

Sustainable Stretching: PET Film improves the Energy and Ecological Balance

Food packaging, medical blisters and solar panels: films are used reasonably all over the world. But they are increasingly being criticized as source of environmentally threatening plastic waste. Lindauer DORNIER GmbH demonstrated how innovative system technology can significantly improve the energy and ecological balance of film at the K exhibition in Düsseldorf. The machine manufacturer presented new concepts for energy-efficient and sustainable film production.

When the environmental impact of PET film is discussed, the focus is usually on recyclability and the level of recycling rates. However, there are other important factors that influence the ecological balance of the material – for example its thickness in combination with its barrier characteristics. Because the lower the film thickness and the associated weight savings, the more economical its use is with a less environmental and infrastructural impact. A principle the engineers at DORNIER have fully applied: “PET film produced on DORNIER lines has the lowest basis weight on the market,” says Bernhard Wandering, Head of Product Line Specialty Machines at the innovative family company from Lake Constance.

DORNIER also demonstrated in Düsseldorf how smart recycling of production waste works. “Film stretching lines from DORNIER recycle production waste completely inline,” says Wandering. For example, the separated film edge is fed back into the extrusion process, allowing the edge trim to be reused in continuous

production without regranulation. Since the recycled material does not have to be melted again without intermediate regranulation, the viscosity of the material remains at high level. According to Wandering, the energy required for waste processing and recycling should be further minimized in the future. The newly developed DORNIER Diamond Flake Silo, which in combination with a film stretching line or as part of a film recycling system offers the ideal solution for any flake storage, also sets new standards in terms of efficiency. “The technology, developed according to the latest principles and criteria, helps to avoid bridge building and ensures optimum flake discharge,” states Wandering.

An improved and patented air flow of the transverse stretching machine (TDO) with a new penthouse design was also presented at the K. This reduces thermal energy consumption in film production by up to 35 percent. Because the long-life TDO chains with the patented clip system can be overhauled many times in the course of their production lifetime, DORNIER lines can be used efficiently for decades. This way, lines that are up to 50 years old can also be adapted to the latest requirements in terms of productivity, economy and environmental protection by means of conversions. “Sustainability is a long-term corporate strategy at DORNIER,” emphasizes Wandering, Product Line Manager. Upgrades of the control system and drive technology also ensure that the lines “Made in Germany” have a very long lifetime and energy efficiency, thus reducing the CO₂ emissions. Even the width of the line is of central importance for energy-saving and sustainable stretching: The recently started world’s widest PET film stretching line from Lindauer DORNIER not only exceeds the company’s own record width; with its 10.6 meters, the line shines with production speeds up to 550 meters of film per

minute and a production quantity up to seven tons per hour. This significantly reduces specific energy consumption. The first PET line of this dimension went into operation in South Asia in the middle of this year. According to Wandering, further lines of this width will be commissioned in the next few months.

The fact that DORNIER innovations also have a considerable influence on the success of the energy turnover is shown by the well-proven MD-Relax system for the transverse stretching process, which is based on a variable clip. With this system, the film shrinkage, especially the MD shrinkage, can be perfectly adjusted. Film from DORNIER lines is therefore perfectly suited for films which are exposed to high heat immissions, for example as battery separator film in electric cars or film in photo-voltaic elements. The reason: The very good dimensional stability of the film even at high process temperatures in the longitudinal and transverse directions eliminates the need for time-consuming offline post-treatment.

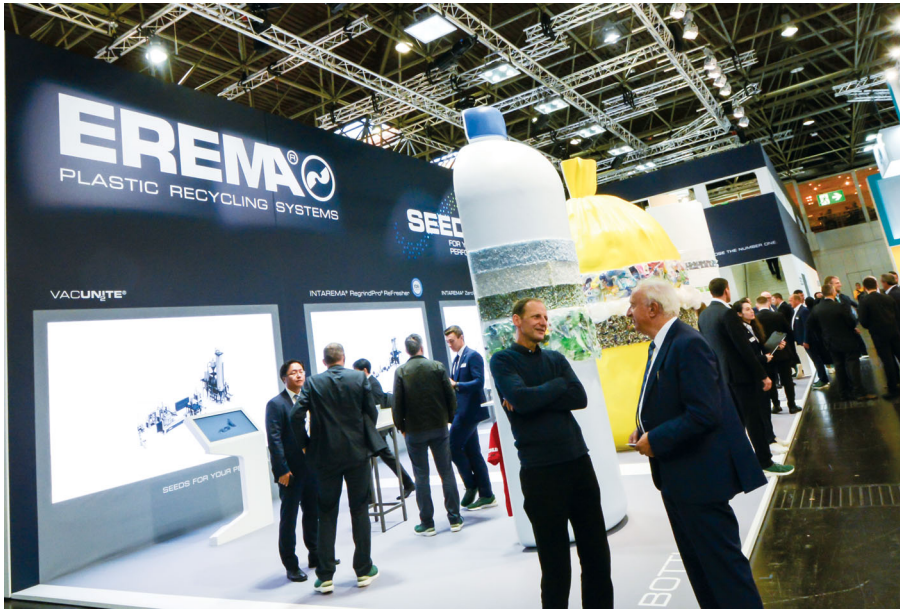
The Composite Systems product line also presented new developments for roving and 3D weaving machines, as well as tape production systems and tape weaving machines in Düsseldorf. As a system partner, DORNIER supports component, fiber and polymer manufacturers in the production of semi-finished textile products made of glass, carbon, aramid and basalt.

The new customer platform myDoX® will also played a role at the K. The portal is based on the very latest database technology and will add digital order management to DORNIER’s highly regarded personalized technical, installation and maintenance service. It will provide an online shop with permanent availability for original parts (DoXPOS – Parts Order System) for all product lines.

► Lindauer DORNIER GmbH
www.lindauerdornier.com

Save up to 35 percent on thermal energy: With the improved airflow in DORNIER TDOs, energy efficiency can be significantly increased (Source: DORNIER)





At K 2019, EREMA presented technological solutions for a wide range of recycling requirements (Photo credit: EREMA)

Successful K 2019

The EREMA Group's assessment of K 2019, the world's largest plastics trade fair, is positive all round. All seven companies and business units were at the show in Düsseldorf and the group of companies presented its entire range of products and services more comprehensively than ever before. They also made recycling and recycling management a tangible experience for visitors to the Circonomic Centre together with partners from the plastics industry.

The circular economy and plastics recycling were the top themes at this year's K, and EREMA created a display platform in their Circonomic Centre where visitors to the trade fair were able to experience both themes live every day. With the recycling demonstrations and the large variety of products made of recycled plastic - which the plastics recycling machine manufacturer was able to exhibit thanks to their cooperation with 30 partner companies from the entire recycles chain - the outdoor Circonomic Centre became one of the most popular visitor attractions

at the whole trade fair. For Manfred Hackl, CEO of the EREMA Group, this was confirmation of what they wanted to achieve with the Circonomic Centre: "Our goal was to work with our partners to draw attention to what is technologically possible in terms of recycling and the circular economy and what has already been implemented successfully and cost effectively. With this we wanted to provide a strong impetus to get new recycling projects on the road even faster in the future. The visitor interest and the high level of positive feedback we have received show that we have succeeded very well together with our customers and partners," he says, drawing a positive balance.

The huge interest in the recycling technologies from EREMA Group companies is indicated not only by the high number of visitors to the Circonomic Centre and our trade fair stands, but also the very pleasing number of sales. This shows that the group of companies and its range of innovative products are ideally positioned to offer customers tailor-

made solutions for a wide band of recycling requirements.

"K 2019 has been a great success for the entire team at the trade fair and at home. And with technological highlights such as VACUNITE® in the bottle-to-bottle segment, the new INTAREMA® ZeroWastePro in-house recycling system, our digital customer platform BluPort, ReFresher technology and QualityOn: Polyscan, we have once again been able to demonstrate our innovative strength," says EREMA Managing Director Michael Heitzinger in summing up. Another topic highlighted at the K-show: The U.S. Food and Drug Administration (FDA) has recently approved the food contact compliance of post consumer recycled HDPE (PCR-HDPE) produced with the patented INTAREMA® TVE-plus® ReGrindPro® extrusion system in combination with the ReFresher module.

Back at company headquarters in Ansfelden, however, work on expanding the site - including doubling the manufacturing space - is in full swing. Completion and start-up are scheduled for spring 2020.

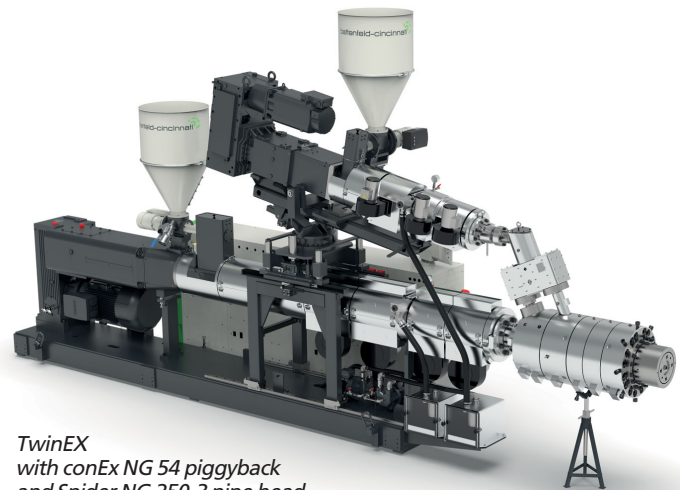
The New PVC Pipe Heads Already Tested in Practice

At its trade fair booth, the battenfeld-cincinnati Group exhibited a fast-dimension-change pipe head, which permits dimensional changes during ongoing pipe production, as well as two new Spider pipe heads for PVC processing. With these three models designed and manufactured in-house, the extruder specialist demonstrated its enormous expertise in the field of extrusion heads. The two PVC pipe heads belong to the new generation of Spider heads (NG), which offer the advantages of low material consumption and narrow tolerances resulting from optimized layout.

The Spider NG 160 mono-layer head is suitable for pipes with dimensions ranging from 32 to 168 mm and output rates from 250 to 800 kg/h, the 3-layer Spider NG 250-3 for pipes from 110 to 250 mm in diameter and outputs from 400 to 850 kg/h. Both these heads were shown directly in combination with suitable extruders. While the mono Spider is flanged onto a conical conEX NG-65 twin screw extruder, the practical example involving the 3-layer pipe head, Spider NG 250-3, is part of an extremely space-saving piggyback solution. The smaller conical twin screw extruder model conEX NG 54 was shown mounted on top of the twinEX 93-34 R parallel twin screw extruder with a pipe head.

With the latest further development of its proven pipe die series, battenfeld-cincinnati has managed to meet all at once the various demands from customers for low material consumption, a wide process window, high throughput rates and low investment costs. The 3-layer-Spider of the new generation comes with a completely new design. Here, the middle layer is distributed via spider-type mandrel geometry. It ensures that an extremely wide range of different materials, such as compounds with high filler content, regrind mixtures and even foaming compounds can be processed without any problems. A spider-type mandrel which offers the same advantages is also used for the inner layer. The flow channel geometry of the outer layer consists of several coat hanger distributors positioned around the circumference and a matching pre-distribution unit supplying them with even flow quantities. In this way, extremely narrow wall thickness tolerances can be achieved.

What is more, this system shows excellent flushing properties. The pipe manufacturer who has been testing this die in practice for some time is very satisfied with its low mate-



*twinEX
with conEX NG 54 piggyback
and Spider NG 250-3 pipe head*

rial consumption and narrow pipe tolerances. The Spider NG 250-3 was presented to the public for the first time at the K 2019. Not only the 3-layer dies, but also the mono-layer heads have been completely revised. From the K onwards, the pipe heads of the Spider NG series are available in six sizes for pipe diameters ranging from 6 to 630 mm. With the help of flow simulation, the performance of the well-known mono dies has been significantly improved in the course of their re-design.

The newly developed "twin compression" concept is applied here, which enables the production of pipes with optimal wall thickness tolerances and virtually without spider lines. The inner surfaces can also be adapted according to customers' wishes. The new distribution concept is rounded off by numerous design optimizations, which substantially simplify the change of die sets in particular and thus minimize changeover times.

From this series, too, a model already being tested in practice is proving successful in every respect. By the way, new-generation Spider pipe dies for twin-strand lines are also available.



Circular Visions, Small Flakes and Big Data



TOMRA Sorting Recycling exhibited at the K-Show 2019, presenting its frontrunning position in the circular economy, including sorting equipment like the recently introduced INNOSORT FLAKE, and giving an outlook to a groundbreaking innovation in the fields of Artificial Intelligence.

Over the last decades, resources have been exploited recklessly to satisfy civilization's infinite demand for resources and virgin products, leading to resources becoming rare and under unprecedented pressure. Particularly plastic finds itself in focus with its usage being questioned. At present, around 40% of plastic packaging is sent to landfill, 32% ends up in nature as litter and 8 million tons of plastic is swept into the oceans, amounting to an annual loss of between 80 and 120 billion dollars' worth of materials. Reconsidering the way resources are obtained, used and reused is a major cornerstone for overcoming the barrier of limited resource availability.

As a leader of the resource revolution, and in its unique position to help shape the circular economy, TOMRA proposes stepping back from linear models and aligning with the reuse models of a truly circular economy. Unlike the currently dominant linear economy as per which products are made and thrown away after consumption, the circular economy targets the recovery of materials, which are efficiently brought back into the supply chain for being transformed into new products. Once consumed, products are not littered but collected by deposit systems, by curbside collection or by MRF sorting plants sorting diverse material for the subsequent recycling process.

Following this concept, resources are kept in the loop while maintaining virgin like quality and extracting a maximum of the product's value. Thus, waste is turned into value.

With the circular economy being a topic of considerable debate in the industry, systematic approaches are already being discussed to stimulate the change. New legislation mandating an improvement of recycling rates, market pulls and consumers demanding more sustainable products prove supportive in transforming theory into practice. Additional solutions are seen in the promotion of plastics collection, in stopping leakage through infrastructure and deposit systems as well as in manufacturing products that are regenerative and restorative by design.

In effect, these would be ideal solutions and processes that can only be realized with all stakeholders participating in the fight for a healthy environment and a sustainable, thriving economy. TOMRA, being a key stakeholder and driver of this transformation to take place, promotes the circular economy by means of advanced collection and sorting systems that optimize resource recovery and minimize waste. Its sensor-based sorting solutions, such as AUTOSORT, AUTOSORT FLAKE and INNOSORT FLAKE,

are well established solutions heading the sorting and reprocessing process within the plastic value chain.

Volker Rehrmann, Executive Vice-President TOMRA Recycling & Mining and Head of TOMRA Circular Economy, clearly states: "Continuing using our resources in an unsustainable and inefficient way should no longer be an option. At TOMRA, we take this global problem seriously and continuously develop new sorting solutions."

At this year's K-Show TOMRA gave an understanding of the circular economy and the role the company and its products play in there.

Sorting small: Displayed at K-Show, the INNOSORT FLAKE is a good example of positively impacting and purifying the recycling process. Since its launch at PRS Europe in Amsterdam in April 2019, it has shown to be the ideal dual-sorting solution for plastic recovery facilities, sorting plastic fractions from 2 to 12 mm by color and simultaneously by polymer types. Thus, vast proportions of contaminants can be removed and the potential loss of PET flake material significantly be reduced.

This all-in-one solution with ultra-high resolution and specialized sensor configuration offers superior performance with exponential results. It's an economically favorable sorting solution providing a quick return on investment and scalable flexibility.

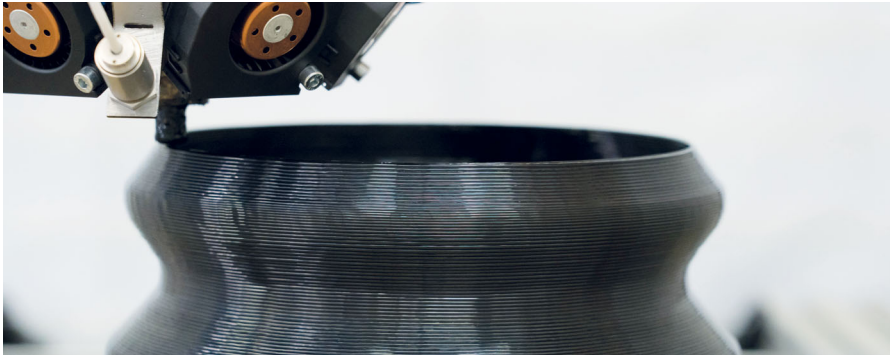
Sorting smart: Besides delivering state-of-the-art sorting machines, TOMRA also focus on developing groundbreaking innovations advancing the sorting process even more.

Based on the current possibilities to collect and manage large amounts of data and artificial intelligence strongly surfacing, TOMRA goes ahead with the development of a deep learning software for sensor-based sorting.

As a subset of machine learning and artificial intelligence, the deep learning software is in a position to learn individually from a sizeable amount of collected data, equaling or even outperforming sorting results achieved by humans and common machines. With the combination of deep learning models and TOMRA's sorting solutions, objects that could previously not be separated can now be sorted with high purity levels. In this regard, deep learning is considered as a promising approach when it comes to addressing the increasing challenges in waste sorting, such as new waste streams, objects being detected but not successfully ejected or covered by other materials.

Continuous innovation and technological advancements for meeting today's demands in the recovery and recycling process is essential for TOMRA.

► TOMRA Sorting GmbH
www.tomra.com/recycling



New Devisision introduced

The machine manufacturer Hans Weber Maschinenfabrik GmbH, world-renowned for the production of extruders and grinding machines, is further expanding its product portfolio with the introduction of the "Robotics & Automation" and "WEBER Additive" divisions. The medium-sized company has set itself the goal of making additive production of large-volume plastic components possible by means of granulate extrusion on an industrial scale with specially developed machines.

With an optimized WEBER single-screw extruder, the robotic test facility already manufactures assembly aids for our internal engineering requirements. Sample parts are printed in various materials working closely with our customers. The building chamber of the test facility is up to 2400 (L) x 1200 (W) x 600 (H) mm³.

The system called "DX 025" is a portal system equipped with a high-quality granule extruder. "DX" (Direct Extrusion) and is designed for 3D printing directly with low-cost granules. "025" in

the machine name stands for the large working area: the prototype offers 2.5 m³ of constructions space within our high-precision portal system.

There are hardly any limits this system offers to innovative customers. Working with soft TPEs to CF/GF high-filled materials, WEBER's wear-resistant extruders can plasticize all plastic pelletized materials. Large components are produced with the granule processing technology, this is not only faster but also significantly cheaper than with filament printing.

Companies looking for an individual solution in additive manufacturing will find what they are looking for at HANS WEBER Maschinenfabrik. The family owned company, now with over 470 employees has always stood for perfection in special machine construction and customer-specific machine solutions for almost 100 years. Thus, the robotic production systems and portal systems with DX technology will always be individually adapted to customer requirements in order to meet the highest industrial requirements.

► HANS WEBER Maschinenfabrik GmbH
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additive@hansweber.de

Sales at K 2019 exceed \$ 17 Million

Davis-Standard reported that participation at K2019 resulted in sales over \$17 million USD. The new orders represent the full spectrum of Davis-Standard's product lines, including orders for pipe and tube systems, blown film systems and coating and lamination systems. In addition to complete lines, there are several developing projects for equipment and technology upgrades to existing product lines.

"Our K booth exceeded expectations with productive customer meetings, new sales and promising leads," said Jim Murphy, Davis-Standard President and CEO. "Our brand message 'Where your ideas take shape' has resonated with customers as we work to build and promote sustainable solutions that support the circular economy. We anticipate additional business as result of K in the months ahead."

This was the first time Davis-Standard exhibited at K with the newest members of its global brand, Maillefer,



Brampton Engineering and TSL. Each has added a new dimension to Davis-Standard's robust line of equipment and aftermarket services.

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



C:GRAN: Cutter-Compactor-Extruder Combination

The product portfolio of “cutter-compactor-extruder combinations” has been expanded to include sizes with higher throughput capacities. The NGR C:GRAN series has been extended to machines for outputs of 2,200 kg/h and over. This expansion follows the market trend of increasing plastic recycling quantities and modernization of recycling plants to satisfy the increased demand for high-quality rPellets.

The rapidly increasing recycling quantities of plastics are driven by expectations and specifications from European legislation, which will continue to rise in the coming decade. However, the recycling industry is not only facing a quantitative challenge – the quality of rPellets must also be comparable with that of virgin pellets in order to provide plastics processors with the raw material security they are already accustomed to.

“NGR has a broad portfolio of recycling machines with very different, specialized technologies. We recommend shredder-feeder-extruder combinations, especially for dry industrial waste – but for high moisture mixed plastics from the post-consumer waste stream, cutter-compactor-extruder combinations offer advantages,” explains Patrick Steinwendner the strategic and technological access to the market. Steinwendner is Product Manager and Marketing Manager at NGR.

The noticeable market dynamics are affecting every area of the re-



C:GRAN recycling line (Photo: NGR)

cyclung value chain, although the material qualities of collected plastics from household collections are stagnating at a rather low level. In order to still be able to produce high-quality rPellets, manufacturers of sorting plants, washing plants and finally recycling machines are therefore even more challenged in the direction of innovation.

The inline measurement of the most important plastic properties offers the rPellets manufacturer the possibility to determine the quality of the plastic melt already during the recycling process and to initiate appropriate sorting measures or additive feeds immediately. The automated quality recording of MFI, mechanical and optical properties (colour, polymer defects) and polymer recognition create the necessary confidence in the rPellets processor and provide information on the quality level via data acqui-

sition compared to the preliminary processes.

The demand for larger recycling machines and automated quality records is a clear sign of increasing efficiency pressure on the recycling industry.

“Thanks to the modular design of the NGR systems, we can significantly reduce development times. In this project, we were able to assemble over 80% of the system components from parts that had already been tested in other machines - this is very much in line with our rapidly changing market and customer requirements,” says Thomas Pichler, Technical Director and co-owner at NGR.

Next Generation
Recyclingmaschinen GmbH
www.ngr-world.com

Mono-Material Hot Fill Cups out of foamed PET

SML is developing foamed sheet for hot fill applications with new features in terms of heat resistance, insulation and recyclability in a joint R&D programme together with its partner KIEFEL. The basis for these new products is a 3-layer PET (or PP) sheet with a physically foamed central layer.

Mono-material foamed PET or PP sheet produced from SML's new systems have outstanding product features that can help to replace difficult-to-recycle hot fill applications made of expanded polystyrenes. Generally, PS is permitted for food applications, but it is considered to release the chemical compound styrene into the environment.

The foamed sheet from SML's new lines has an A/B/A structure, in which the central B layer is foamed while the two outer layers are rigid. The central layer is physically-foamed with the injection of nitrogen or simple carbon dioxide gas which is widely available. Mono-material structures facilitate recycling while the foamed layer reduces weight up to 50% compared to PET sheet with the same properties. No special additives are required to enhance the heat stability of the sheet which is thus suitable for the economic production of low-weight cups with excellent insulation properties.

In a new joint R&D project, KIEFEL Technologies and SML are exploring and further developing the potentials and

Hot fill cups made of foamed PET: heat-resistant, insulating and easy recyclable



opportunities this type of foamed sheet is offering. Beside end products with very specific mechanical and thermal properties, the optimization of the manufacturing processes and the research on new recycling methods are in the focus of this research programme. The first outcomes are absolutely promising: cups boasting a heat resistance of up to 100 degrees Celsius have been created from standard APET. The sheet for such cups can have an overall density of about 0.65 kg/dm³, which saves material and increases the insulating properties, so that it is possible to hand-hold these cups filled with extremely hot liquids. Unlike polystyrene, mono-material foamed sheet, especially from PET, is straight-forward to recycle as the relevant infrastructure already exists in many places. Hot fill applications made of foamed PET sheet can be easily processed with other single use products from PET. This opens opportunities to branches as airline catering or system gastronomy which still rely on disposable items. When all products are from the same material, respectively PET, recycling processes are becoming truly effective – both with regard to ecological and economical aspects.

A key element in the joint research programme of KIEFEL and SML is the new demonstration and development line for thermoforming sheet in SML's Technology Centre. With a thickness range from 200 micron to 2 mm, the line offers a maximum of flexibility for all kinds of projects related to thermoforming. Except from this research programme, it stands open to SML's customers and partners for trials and R&D.

SML Maschinengesellschaft mbH
www.sml.at



Able to Handle Anything

Vecoplan presented its newly developed VIZ (Vecoplan Infinity) line of shredders, a world first in plastics recycling, at K 2019 in Düsseldorf, Germany. These highly efficient shredders are particularly flexible in terms of cutting geometry. The machines can be precisely adapted to different input and output requirements by changing the rotors and blades and by selecting the right screen. They also stand out for excellent reliability, low operating costs and maximum throughput.

"Our VIZ series offer a universal solution for all kinds of input materials," says Martina Schmidt, head of Veco-

Vecoplan's new VIZ can reliably shred a wide range of plastics materials (Photo credit: Vecoplan AG)



plan's Recycling and Waste Division. Companies that recycle plastics nowadays have to deal with a wide variety of materials. "There are almost no limits when it comes to characteristics, colour and form," she explains. The machine manufacturer from therefore puts a strong emphasis on flexibility when it comes to cutting geometry. The machines can be precisely adapted to different input and output requirements by changing the rotors and blades and by selecting the right screen. The performance can be precisely adapted to the interface.

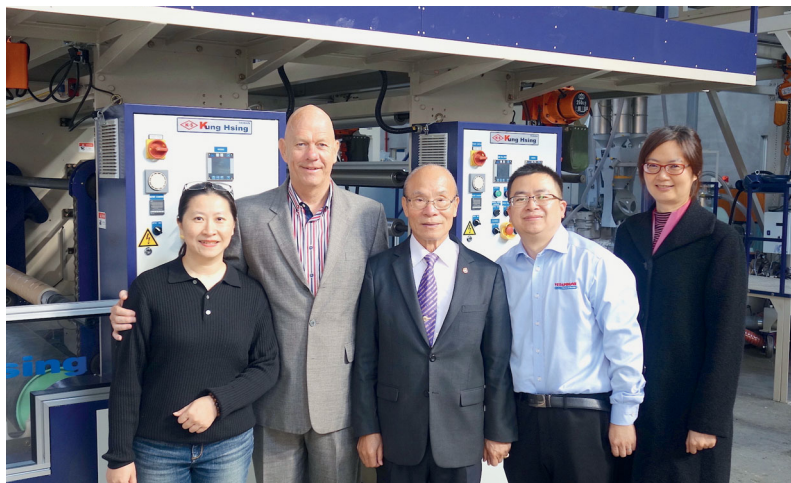
"Our new rotor solution offers numerous advantages," says Schmidt. "Thanks to the bolted tool holder plates with variable cutting tip sizes, rotor changes are now a thing of the past." Users only have to exchange the plates to quickly adapt the cutting geometry to different output grain sizes. The rotor remains in the machine. Even cutting tip changes can be carried out with ease – there is no need to touch the rotor. If a tool holder is damaged, only the relevant segment has to be replaced.

The design of the machine allows users to choose between the HiTorc drive with its powerful start-up phase and high torque or the ESC, Vecoplan's frequency-controlled, belt-driven direct drive. Both systems are patented and notable for their high energy efficiency.

"The VIZ is based on our extensive experience in the shredding of plastics, which has enabled us to meet a wide range of customer requirements," says Schmidt. In addition, Vecoplan has optimised the ram and revised the machine design. Thanks to the improved ram height, the VIZ can now handle entire bales. The working chamber of the machine was also enlarged, permitting reliable shredding of bales with model 1300 and higher. In a comparable Vecoplan model range this is possible only with sizes 1700 and higher, although the smaller version would have the necessary throughput.

Users can also equip the machine with a second counter knife. Other advantages arise from the machine's clear, well-thought-out design: the VIZ is easier to clean, and the newly designed ram is closer to the rotor, thus reducing material residues.

Left to right: Stephanie Shea (KS), Finn Hinze (Vetaphone), Chin-Lien Tsai (Founder & President of KS), Tom Chen (Vetaphone), and Carol Liang (Vetaphone agent)



Partnership

'Responsive and professional' is how leading Taiwanese manufacturer Kung Hsing (KS) described the working partnership it has developed with Danish company Vetaphone. The two first began working together in 2011, when KS decided it needed a better surface treatment supplier for its range of extrusion technology than it was able to source in Asia. Speaking for KS, Stephanie Shea commented: "Our customers have very high expectations of quality and very little toler-

ance of inconsistency as they seek to add value to their packaging. We found we were unable to guarantee quality with locally sourced corona systems and it was becoming a major problem."

KS has two factories. The first is mainly for manufacturing parts and assembly, while the second is for testing, assembling and shipping. With a skilled staff of more than 80, the company uses the latest 3D software to design high-accuracy parts, working on the principle that using the best quality components will provide sustained high-performance machines. So too with ancillary equipment suppliers. Quality in equals quality out, and with a loyal customer base that trusts KS technology, it knows it must work with sub-suppliers that it too can trust. Stephanie Shea added: "Our customers expect us to solve their problems. If we do, they come back for more. That's why we like working with Vetaphone – they understand our philosophy and always respond when we need them to. This is vital for repeat business."

KS manufactures six different extrusion lines for blown film, from the top of the range Multi-Layer Co-Extrusion High Speed model, capable of up to seven-layer co-extrusion and multi-layer HDPE ABA and ABC,

to the Economical E-Type HDPE/LDPE High Speed line, and a Polypropylene High-Speed line. There are also Monofilament machines making Nylon, Polyester, PP/PE, Flat Yarn PP/PE for woven bags, and a PP packing band making machine, a PP sheet making machine, and a range of plastic re-cycling machines. The expertise offered in all of these sectors, coupled with ISO 9002 and CE accreditation, has led to KS machines being sold to more than 100 countries worldwide. Quality control is at the heart of the company's business, with each machine being fully test run prior to shipping.

Speaking for Vetaphone, Finn Hinze, Sales Manager for Asia said: "Accurate and consistent corona treatment is essential in the extrusion process but too few companies seem to realise this. Because it's a small unit and an ancillary process, the performance of the corona treater is too often under-valued. Vetaphone units offer the control needed for consistent quality, without which there can be a high level of wastage, and nobody can afford waste these days!"

Vetaphone
www.vetaphone.com

Kung Hsing
www.kunghsing.com.tw





New Hot-Wash System

Recyclates that are barely distinguishable from virgin material – that’s what plastics processing specialist Lindner had in mind when developing the new hot-wash system to be presented at the K 2019. In addition to effective cleaning, the solution offers not only high but above all continuous output.

Gone are the days when products made of recycled plastics were a well-intentioned but marginal phenomenon. Markets, and in particular big brands, have to react to the sustainability trend and are demanding ever-higher quality recyclates in ever-increasing quantities. To deliver this high quality, complex processing systems – and here, in particular, washing technology – are needed. One specific challenge is posed by undesirable materials stuck to post-commercial and

post-consumer film as well as unpleasant odours. The more effectively these materials can be removed, the higher the quality and the potential revenue.

Lindner Washtech has developed a three-stage hot-wash system to meet these requirements and also ensure high productivity. Managing Director of Lindner Washtech, Harald Hoffmann: “When developing the new components, we focused on effective cleaning and continuous processing so that all preceding and subsequent equipment can be operated productively at all times. That is why we based this solution on our tried-and-tested technology, combined it with the advantages of hot washing and deliberately left out the otherwise common, but often vulnerable, batch processing.”

The modular and compact Lindner hot-wash system has three stages and does not require any additional conveyors. In the first stage, the shredded and pre-washed plastics are fed into a reactor, mixed with hot water and washed. Already at this stage, mixing arms apply concentrated friction to the material. The double discharge screw conveyor then feeds the plastics into the new hot-wash rafter in optimally dosed quantities. This is a new and improved version of the already successful rafter pre-washer, in which continuous friction is applied to the material to remove and separate residues effectively and gently. In the third and final stage, the Twister friction washer, a machine specifically designed for this application, removes the hot water or the hot caustic solution. The liquid is then separately treated.

Optionally the system can also be operated with caustic solution to remove even stubborn fat and oil residues, as well as glue. The downstream water treatment system continuously monitors the water’s alkaline content and automatically applies the necessary chemicals.

Alongside Lindner’s modern and robust shredders, the innovative hot-wash system is a key component in Lindner’s new system solutions for plastics recycling.

The new Lindner Washtech hot-wash system cleans effectively in three stages and guarantees continuous output





Kiefel Packaging launches a trim-in-place performance tool

Future Proof Performance Tool launched at K-Show

Kiefel Packaging added a brand new performance tool to the Bosch Sprang Thermoforming Tools™-series. A trim-in-place solution designed for maximum performance in 24/7 operation.

"The next generation thermoforming machines has improved significantly in both performance and efficiency. The cyclespeed of the new KTR 5.2 for instance, can be up to 50 cycles per minute. Innovative thermoforming machines like this need a tool that is optimally designed to handle these kind of specifications," says Arjan Bogers, Technical Director of Kiefel Packaging. "Our new performance tool is equipped to meet and even exceed all expectations. Obviously it is a perfect fit for the new KTR5.2. Speed Cup-forming System from Kiefel, but the tool is equally available on all other major thermoforming systems. We have a dedicated tool team, that together with our R&D department put all their effort in realizing continuous innovation for our customers. It is safe to say that for this project we have put 40 years of experience in thermoforming in one tool," reports Bogers.

The tool consists of a steelbased tool construction with a lightweight design, resulting in a 15% weight reduction. An innovative cooling solution is integrated, designed to fit the requirements of high speed performance thermoforming machines. A new cutting punch technology is applied, using divided cutting punches. With its tight

tolerances, a maximum cutting life time is guaranteed. And of course the tool is equipped with Bosch Sprang™ quick change tool parts for form inserts, ejector bases and plug assists.

"These are just a few of the benefits that are integrated in our future proof tool that allows our customers to achieve highest quality production with an optimal output in 24/7 operation."

The new trim-in-place tool fits perfectly in the sustainability vision of Kiefel Packaging. In a circular economy approach, biobased materials like PLA or products made from 100% recycled material, demand different requirements from thermoform tooling. For instance, more cutting forces are needed when working with R-PET or PLA. "The new tool is designed to match these demands. Besides that, the tool itself is easy to maintain and has an optimal lifetime according to our motto: "Thermoform tools that are made to last."

The tool was launched and demonstrated in combination with a KTR 5.2 Speed forming machine at the K-Show.

► Kiefel Packaging B.V.
www.kiefel.com/en/kiefel-packaging



MOL Group's new TIPPLEN R 665 XClear PP resin clears the way for new extrusion blow molding applications (Photo © 2019 MOL Group)



New PP Resin clears the Way for New Extrusion Blow Molding Applications

Hungary's MOL Group showcased at K 2019 a new grade of polypropylene specifically tailored for extrusion blow molding (EBM) that offers excellent optical properties in terms of transparency and gloss. This development means PP can finally compete with PVC or PET when it comes to transparency in EBM applications. Modified with Milliken Chemical's Millad® NX® 8000E clarifier, MOL's resulting random copolymer – TIPPLEN R 665 XClear PP resin – also offers a fresher look, very low haze, a low yellowness index, and tunable aesthetics.

While MOL Group highlighted the resin at the booth, a pair of machinery manufacturers also was running the grade on their stands at K 2019. Czech machinery maker GDK spol. s.r.o., and Italy's Plastiblow Srl used the EBM process to blow mold cosmetic bottles with TIPPLEN R 665 XClear PP at the fair.

TIPPLEN R 665 XClear works on all types of EBM machines, including single-station shuttle, double-station shuttle and long-stroke EBM machines. And it is suitable for use in all types of bottles.

Millad NX 8000E has been designed specifically to provide a step change in optical properties with standard Ziegler-Natta polypropylene EBM resins. It eliminates the "milky" appearance normally associated with PP in blow molding, and enables PP to replace more expensive, less functional, or difficult to process materials.

Milliken says it worked for several years with machine manufacturers, resin producers, converters and

brand owners to optimize this EBM-specific additive, to ensure it delivered the desired properties without compromising transparency or machine production speeds.

The easy-to-recycle resin performed well in drop tests at 4°C for refrigerated applications and, MOL notes, its optical properties will not change even when used with 30% regrind material that is being reused from virgin TIPPLEN R 665 XClear scrap.

Additionally, MOL notes there is no need to use a mirror polished mold finish to achieve excellent gloss and clarity. This makes it easier to process and can help avoid challenges with air entrapment. The improved rheology of the grade, combined with the presence of the Millad NX 8000E clarifier, serves to overcome the inherent shear stress created during extrusion. The result is excellent optics, while maintaining the standard mechanical properties.

MOL's TIPPLEN R 665 XClear enables PP to replace more expensive, less functional, or difficult to process materials such as PET, PVC and polycarbonate in various blow molding applications. This can include replacing glass or PETG in such applications such as easy-squeeze bottles.

MOL Gruppe
www.molgroupchemicals.com

(Copyright © 2019 Molecor Tecnologia S.L.)



Great Expectations to develop New Projects

Molecor has closed the K 2019 with renewed energy to develop and launch new projects over the next few years. The large number of visitors and interest shown in the company as well as in its products, pipes and fittings in Oriented PVC as well as in the technology to manufacture them, has resulted in the start of new developments and is a great challenge that Molecor will face with optimism to provide the market with the needs demanded.

With a production capacity of 7200 tons per year, the M-OR-P 5012 technology, developed exclusively by Molecor and the only one that will allow the manufacture of PVC-O pipes from DN500 mm (18") to 1200 mm in diameter (48") and 25 bar of pressure (305 psi), has been one of the points that has attracted the greatest interest of the visitors of the event. The high efficiency and high productivity of this system allow manufacturing PVC-O pipes of the largest diameter



in the world in this material in line with conventional extruders, a fact that will revolutionize the sector in a short space of time.

Given the extraordinary results obtained in this important international event, Molecor faces new challenges with great optimism and thanks all visitors for the great interest shown, both in the company and in its developments.



interplastica 2020 in Moscow with Favourable Prospects

In Moscow interplastica, the 23rd International Trade Fair for Plastics and Rubber, held from 28 to 31 January 2020 continues its positive development. Demand for exhibition space in the machinery and equipment segments as well as in the raw materials division remains high. Messe Düsseldorf expects to the tune of 680 exhibitors from 30 countries to occupy 13,000 square metres of net exhibition space in three halls at Russia's most important trade fair for the plastics and rubber industries. With these figures interplastica 2020 seamlessly follows on from the success of the previous event in January 2019.

Germany's Federal Ministry of Economics and Energy (BMWi) – supported by VDMA's Plastics and Rubber Machinery Association – will once again be taking part in interplastics with an official joint German participation. Other national pavilions will come from Italy, Austria and China. Numerous companies from Turkey will also be participating.

Russia plans to fundamentally modernise its infrastructure in the field of waste management over the coming years and is therefore currently developing into a highly promising market for recycling solutions providers. interplastica is accompanying this development with a new "Recycling Solutions" segment in exhibition hall 8.1. An integrated forum with panel discussions on waste man-

agement in Russia and exhibitors' lectures round off the overall concept. Taken together over 50 exhibitors at interplastica 2020 will explicitly present solutions for reclamation and recycling.

Featured for the fourth time now as part of interplastica will be 'fab+print Russia' in Hall 2.3, the Special Show all about Additive Manufacturing and 3D printing. International experts will discuss the developments, opportunities and challenges of this technology while exhibitors will showcase their innovative products and solutions.

The Polymer Plaza in Hall 1 invites visitors to talks and discussions about raw material production, application and utilisation. Focal themes at this Forum include novel materials and applications as well as sustainability and resource savings across the value chain, to name but a few. Held concurrently with interplastica will be upakovka 2020 – processing and packaging. At upakovka more than 250 exhibitors will be showcasing innovative packaging machines as well as technologies and materials for producing packaging materials and media. This event thereby generates synergies galore for interplastica visitors.

Universal Construction Kit of the Future

The Erlenmeyer flask of the 21st Century

The family firm ENTEX Rust & Mitschke from Bochum, Germany is once again represented this year with a stand in the German pavilion at the interplastica fair in Moscow (28-31 January 2020). The main attraction at the exhibition stand will be the new L-WE 30 laboratory roller extruder. This new development supplements the ENTEX construction kit and can be used for example in the plastics, chemical, food, pharmaceutical or cosmetics industries. Laboratory roller die extruders offer everything that the "big" planetary roller extruders can, just in smaller and more compact sizes. As a result of their versatile fields of application, they are mostly used as test extruders in laboratories or for producing small quantities. Some industrial production plants with an output capacity of several tonnes per hour have started on a smaller scale as laboratory roller extruders.

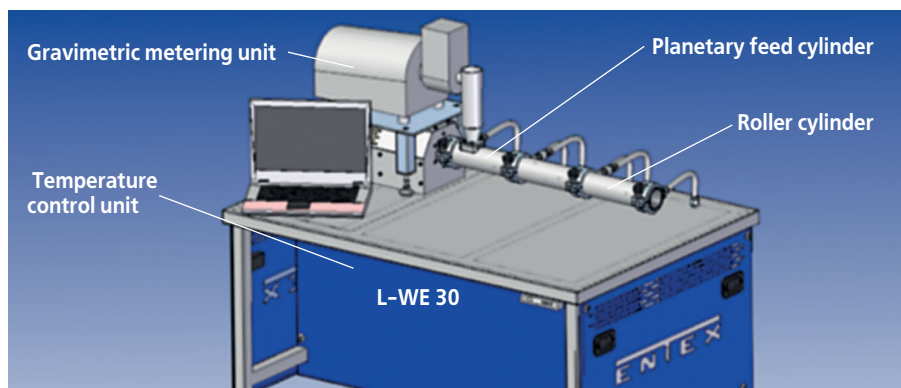
For the particular field of application, the materials used in laboratory roller extruders are individually tailored to the customer's specific process requirements. The size, processing section length and configuration of a laboratory roller extruder have been designed on the basis of calculations and decades of experience.

What is more, special solutions are nearly always possible.

With the new L-WE, the benefits of the planetary roller extruder – absolute temperature control and mixing that is appropriate to the active substance, low-shearing thin-layer rolling-



The trade fair exhibit, the L-WE 30 laboratory roller extruder: The height of the lavishly designed base frame can be adjusted to the local conditions with the press of a button. In order to achieve high effectiveness and very short reaction times for tempering, it is possible to integrate heat exchangers that can be supplied with primary energy such as pre-heated water into the base frame. Depending on the conveyed material and process parameters, the throughput rate is about 1-10 kg/h.



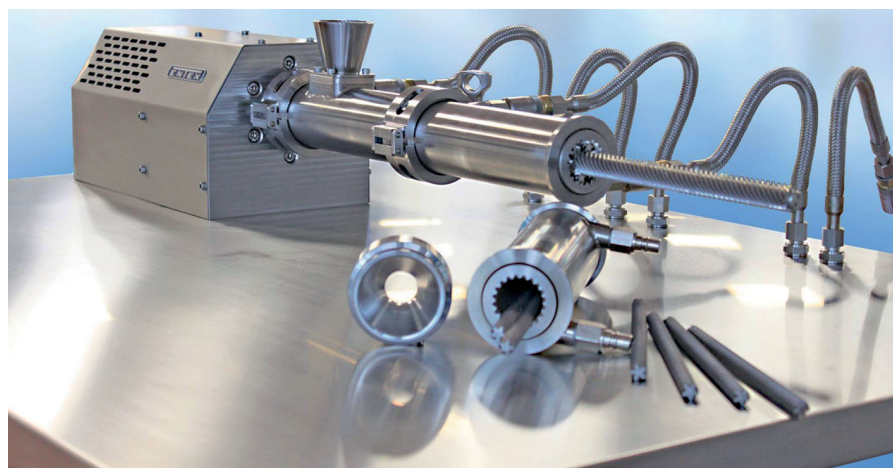
out, large surface exchange – can now also be used in material-critical areas. ENTEX thus now also covers material quantities of several hundred grams per hour.

The liquid-based temperature control systems newly developed by ENTEX, which are also being exhibited, ensure

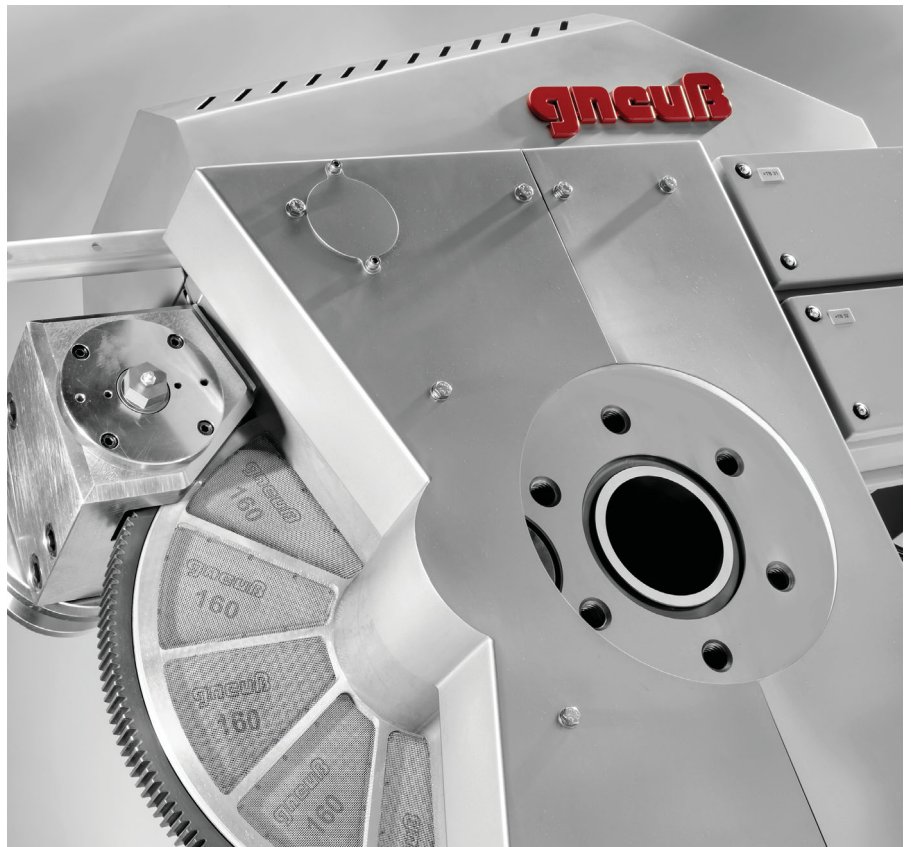
efficient and more precise temperature control in different temperature zones. Considerably shorter heating times and thus a much lower loss of energy are another advantage of the modular construction kit, along with the possibility of efficient cooling.

The new planetary roller extruder by ENTEX combines economy and ecology, making it the most energy-efficient procedure construction kit of the future.

The ENTEX team will be happy to provide further more detailed information at the exhibition stand in Moscow.



Patented Rotary Filtration System SFneos



New Rotary Filtration System SFneos, and more

Gneuss Filtration Technology will exhibit several different models of their patented Rotary Filtration Systems. These continuous filtration systems are characterized by a filter disk on which the screen cavities are located in a ring pattern. Screens can be changed on the part of the filter disk that is not active in the melt channel, while the production process continues to run without any interruptions or disturbances.

The new model SFneos was developed to combine the characteristics of several older models into one simple and cost-efficient solution, offering the following advantages:

- Constant pressure guaranteed – even during screen changes
- Suitable for most types of polymers and viscosities
- Compact design thanks to an enlarged active screen area (up to 2370 cm²)

- Simple and safe handling and operation with several screens accessible for screen changes

- Very cost effective thanks to its improved design

The SFneos is the ideal filtration system for applications that benefit from a continuous, pressure and process constant screen changer, but that don't require back-flushing. The SFneos 90 on display has an active screen area of 260 cm².

Gneuss' top model, the RSFgenius, operates with an integrated self cleaning system for very demanding applications and highest quality requirements. Screens can be automatically re-used up to 400 times and filtration finenesses below 10 microns/1200 mesh are available. There will be different sizes on display, including an RSFgenius 330. It offers an active filtration area of 2150 cm².

Last but by no means least, Gneuss will exhibit two KF screen changers, a KF 75 with an active screen area of 44 cm² and a KF 110 with an active screen area of 95 cm².

Gneuss also offers a new semi-continuous model, the CSFprimus. This model is used as a pre-filer, safety filter or in applications with little contamination and is characterized by a very large active screen area for its small footprint.

Gneuss Extrusion Technology will show a complete Gneuss Processing Unit (GPU) including a second generation Multi Rotation System MRS110 extruder, a fully automatic melt filtration system RSFgenius 90 and a new style online viscometer VIS, for the processing of 600 kg/h of undried and uncrystallized polyester (PET).

The Gneuss Processing Unit (GPU) has been available for more than a decade now and has proven itself for

the reprocessing of highly contaminated materials without pre-drying, especially bulky PET waste such as post-consumer bottle flakes and industrial waste from fiber and film manufacture as well as polystyrene, nylon and other hydrophil polymers. A Gneuss Processing Unit consists of a Gneuss MRS extruder with its unmatched devolatilization and decontamination performance in combination with a highly-efficient Gneuss Rotary Filtration System and an on-line viscometer VIS for intelligent dynamic viscosity control.

The MRS extruder itself has been improved considerably over the last decade and at the interplastica the second generation design will be on display. The enhanced drive design is more robust to handle even more demanding recycling environments. Thanks to several changes in the MRS drum and screw design the already unmatched IV retention has been further improved, while continuing to forgo pre-drying. The MRS extruder permits the processing of PET without pre-drying by using a simple water ring vacuum system to process the material directly to high quality end products such as packaging sheet, strapping tape or filaments. This is achieved by means of its unique and patented processing section. Based on a conventional single screw extruder, the Multi Rotation Section is a drum containing eight satellite single screws, driven by a ring gear and pinion transmission. The "barrels" cut into the drum are approximately 30 % open and provide optimum exposure of the melt.

Thanks to this design, the devolatilizing performance is approx. 50 times greater than that of a conventional vented single screw extruder – and this at a vacuum of only 25 to 40 mbar. While other dryerless technologies are promoting at least partial pre-drying in the meantime, the MRS extruder can process R-PET with up to 1 % moisture content. By avoiding the need for a deep vacuum system and pre-drying, the MRS is an economically efficient alternative to conventional technologies. Further arguments in its favor besides energy savings are the simple and rugged design, small footprint, its ease of operation and low maintenance, processing flexibility and last but not least its excellent melt quality and homogeneity. A Letter of Non Objection (LNO) from the FDA, EFSA conformity and several local approvals in Latin America confirm the decontamination efficiency of this technology.

The days of analogue measurement value transmission in polymer technology are numbered. With the requirements for flexibility, availability and safety of the machines and systems becoming more and more stringent, there is a need for new, digital solutions.

IO-Link is a worldwide standardised technology for digital linking of sensors and actuators. Communication takes place over a point-to-point con-

nection and is thus not a field bus. IO-Link is manufacturer-independent and is becoming more and more widespread in industrial automation engineering. Most renowned controller manufacturers offer IO-Link masters, which are either directly fitted as an assembly in the controller or installed in the field and connected via a bus system.

The traditional melt pressure sensor with an analogue output knows significantly more than just the process pressure. The signal preparation on its inside has been digitised long ago, and as a result, it is in a position to provide valuable information that simplifies maintenance, increases safety and improves availability. Preventive maintenance and condition monitoring can minimise downtimes and optimise process safety. The melt pressure sensor could make a substantial contribution in this regard, if it could divulge its knowledge. But unfortunately, its communications facilities are limited to one direction and one measurement value.

The Gneuss IO-Link sensor offers the possibility to access all those information. Its proven sensor technology, in combination with intelligent, digital communication not only offers monitoring of the electronics temperature, but also records the operating hours in different load ranges. Thus, the user can make out, during ongoing operation, when the electronics head is subject to high heat radiation due to its installation location, or the sensor is continuously working at the upper limit of its measurement range.

In addition, Gneuss' Measurement Technology division will present its complete line of pressure transducers and transmitters, temperature sensors and accessories.



interplastica 2020: 02 2B20

Gneuss Kunststofftechnik GmbH
gneuss.com

Innovative Measuring, Control, Inspection, Analysis and Sorting Devices

The focus of SIKORA's appearance at the interplastica 2020 (January 28 to 31, 2020, Moscow) is on innovative measuring, control, inspection, analysis and sorting devices. At the SIKORA booth 2.3 B12, visitors can expect a comprehensive portfolio of systems for quality control, process optimization and cost savings in the pipe, hose and tube as well as plastics industries.

For online inspection and sorting of plastic material, SIKORA showcases the PURITY SCANNER ADVANCED. The system combines X-ray with optical technology and detects contamination inside plastic pellets as well as on their surface. Perfection in detection provides the adaptive camera concept, where up to three optical cameras are used, depending on the expected contamination and application. For example, an X-ray camera detects metallic contamination inside pellets, optical cameras identify yellow discolorations as well as "black specks" inside transparent and on opaque pellets, whereas color deviations are detected by color cameras. Contaminated pellets are sorted out automatically.

For sample testing or incoming goods inspection and analysis of plastic material, SIKORA presents the PURITY CONCEPT V at interplastica. Material samples, placed on a sample tray, are moved through the inspection area. Within seconds, the material is inspected automatically by a color camera and a projector marks the contaminated material directly on the sample tray. By analyzing the recorded images, contamination on the surface of transparent, diffuse and colored material are automatically detected, visualized and evaluated. A clear allocation of the contamination and follow-up inspection are possible at any time. The system is more accurate, more reproducible and more reliable than human, eye and manual light table, determines the size of

The PURITY CONCEPT V is an automated light table for offline inspection and analysis of plastic material



The CENTERWAVE 6000 for online pipe dimension measurement in extrusion lines will be presented at interplastica

contamination, and thus, contributes significantly to quality control and process optimization. Furthermore, SIKORA offers systems for offline inspection and analysis based on X-ray technology that detect and analyze metallic contamination inside of plastic materials.

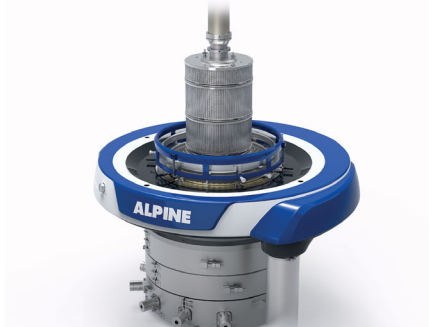
For a 100 % quality control during the extrusion of pipes, SIKORA exhibits the CENTERWAVE 6000. Millimeter wave technology precisely measures the diameter, ovality, wall thickness and the inner profile (sagging) of the product. The measuring principle does not require any coupling media, is not influenced by temperature or the plastic material and measures precisely without the need of any calibration. A presetting of the product parameters is not required. Easy operation and precision lead to the highest quality of the final product as well as cost savings and optimal efficiency.

The X-RAY 6000 PRO is a further highlight for measuring the wall thickness, eccentricity, the inner and outer diameter and the ovality of hoses and tubes. Hereby, the thickness of up to three different material layers is measured. Furthermore, SIKORA presents diameter measuring systems of the LASER Series 2000 as well as LASER Series 6000, which also offer lump detection in addition to diameter measurement. SIKORA's presentation in Moscow is completed by reliable lump detectors that detect irregularities on the product surface.



interplastica 2020: Booth 2.3 B12

SIKORA AG
www.sikora.net



Film and Recycling Division in Focus

Film Division

The film technology division of Hosokawa Alpine, one of the leading suppliers in the field of process engineering and blown film extrusion, is presenting its latest developments and current components for efficient film production at interplastica 2020 in Moscow. The plastics sector faces major challenges in view of the increasing demands for efficient use of energy and resources and high standards of quality for flexible packaging. As a technological pioneer, Hosokawa Alpine offers a wide range of appropriate solutions for future-proof system configurations. The new HX Select extruder series, for example, features an innovative cylinder and screw design for up to 50 per cent higher output, with at the same time an energy saving of up to 20 per cent versus standard barrel extruders. Another highlight presented by Hosokawa Alpine is a complete cooling system, consisting of the new Alpine CRX cooling ring series for outer cooling as well as the also new Alpine HT cooling tower for inner cooling. The low-counterpressure system achieves energy-efficient use of existing cooling capacity and guarantees optimum film quality with maximum output. The Alpine ASW screen changer will also be presented as an additional innovation. The screen changer developed by Hosokawa Alpine blends perfectly into Alpine systems and makes for maximum efficiency. The new Alpine HWD winder ensures perfectly wound films. The latest-generation winder combines the advantages of flatbed and turret

winders in a single machine and allows high winding speeds with perfect film quality. The two digital tools, Hosokawa Alpine Isa and ExVis 5.0, round off the system portfolio. Hosokawa Alpine Isa is a central digitisation platform, developed from scratch, that can read out, save, display and analyse process data from the widest range of plant types. The update to version 5.0 gives the tried and trusted ExVis process visualisation tool many additional new features, in addition to a more neatly structured and convenient user interface. This transforms ExVis into a fully networked system in which the data of all system components can be merged and managed.

Recycling Division

Among others, Hosokawa will present a robust high-performance granulator. The efficient recycling of production waste within the framework of a closed material circuit is becoming increasingly important. Hosokawa Alpine sets standards here thanks to its decades of experience. The Rotoplex model from the granulator product line has proven itself to be particularly successful for the reliable size reduction of all kinds and shapes of plastic waste. This classic granulator from Hosokawa Alpine is constantly refined and improved and makes its mark even in the current seventh generation by virtue of its reliability and top performance. The high-performance granulator is characterised by its robust design in high-grade spheroidal graphite cast iron in GGG 40 quality, the positive con-

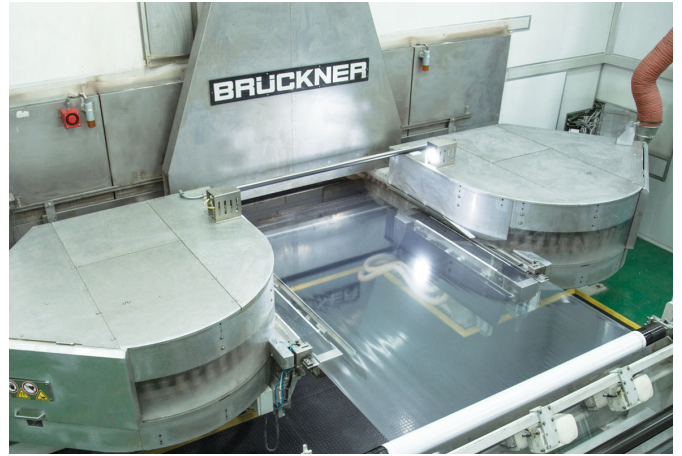
nection of the stator knives as well as a solid and efficient cast rotor. "Besides a sharp cut, our patented cross-scissor-cut rotor guarantees a verifiably reduced energy consumption of as much as 20 per cent compared with conventional cutting techniques," underlines Bernd Kneisl, Operations Director of the Recycling & Granulators Division of Hosokawa Alpine's process technology business segment. Above all when high cutting performance is called for, the Rotoplex granulator – as for example the exhibited 50/80 Ro – shows its true strength. Dependent on the material and screen perforations, the granulator achieves throughput rates of up to 1000 kg/h.

Over and above the high cutting power, the Rotoplex 50/80 Ro has numerous other design features which guarantee immediate benefits to users. Once the top section has been opened, the cutting chamber is easy to access. Which means that cleaning procedures as well as knife or screen exchange are quick and uncomplicated. This serves to prevent long periods of downtime. In addition, the special shaft bearing prevents penetration of the product into the bearing as well as the ingress of excess lubricant into the cutting chamber.



interplastica 2020:
Booth 02 2B15

HOSOKAWA ALPINE Aktiengesellschaft
www.hosokawa-alpine.com



Biax Film Production for a Circular Economy

At Interplastica 2020 in Moscow Brückner presents new solutions regarding plastics and environment, recycling and circular economy. Russian, CIS and Eastern Europe's plastics film producers can look forward to various solutions directly from Brückner's unique R&D center:

Mono-materials: Brückner Maschinenbau is working on a means to make films with the highest possible recycling capabilities producible on film stretching lines. The focus is on mono-material polyolefin film structures made of BOPP or BOPE with superior mechanical, optical or barrier properties, which will be able to

substitute previous multi-layer films made from different materials. These are ideal for the use in new, single-origin packaging and guarantee good sortability in waste separation and optimal recycling. One example: Ultra-high barrier BOPP films with a super-thin EVOH coating – allowing packaging laminate simplification and reducing the number of further converting steps.

Hybrid line concepts: Combination of BOPE and BOPP production: Brückner will introduce two completely new line concepts for the production of BOPE films (biaxially oriented polyethylene). As the demand

for innovative BOPE films is only now starting to develop, film producers will be able to react swiftly and flexibly to market trends: The new lines also have the flexibility to produce BOPP films. Film producers can choose between a working width of 6.6 m and an output of 3 t/h, or a working width of 8.7 m and an output of 5 t/h. These are 5-layer concepts for an extended range of films.

Line concepts for recyclable shrink films: Polyolefin shrink films are the trend for a better sortability and recyclability of bottles and sleeve labels. Brückner Maschinenbau has developed special low-density sleeves, fulfilling exactly this, and offers dedicated stretching line concepts. For low, medium and high shrink films made of PETG, PLA, PS, PVC or even a combination Brückner offers highly efficient lines.

New inline coater: Even if recycling stands at the forefront of a circular economy, new mono-material structures must fulfil the highest demands and must not be inferior to previous packaging films. This is why Brückner has developed a new inline coater for all BOPP and BOPE lines, installed in the line before the transversal stretching. It allows the production of extremely thin functional layers within the nano-range. Due to the extreme thinness, the layers don't disrupt the sorting and recycling, but cater, for example, for an improved



adherence during metallising and excellent barriers in combination with the equally thin but effective aluminium oxide coating.

Advanced Solutions for existing BO Lines in Times of Circular Economy and Digitalization

At Interplastica 2020 Brückner Servtec presents new solutions for the hot topics circular economy and digitalisation, as well as improved services to enhance the availability of existing film stretching lines.

Production of BOPE film with existing BOPP lines: New BOPE-applications are expected to emerge over the next years due to higher demand for recyclable film structures based on mono-materials. BOPE films are applied as "functional layer", i.e. sealing layer or as base films serving printability or metallization. Brückner Servtec introduces new upgrade packages for existing BOPP stretching lines, making them able to produce also BOPE film. The highly flexible solution increases the profitability and allows swift reaction to upcoming market changes.

Inline coating technology to enhance BOPP film: Based on vast experience and successfully realized projects, Brückner Servtec presents new solutions for the utilization of Inline Coating technology in any existing BOPP film production line. The flexible technology adds value to film production by optimizing the surface properties of BOPP films to achieve e.g. higher barrier properties due enhanced metal bonding. Further, it provides surfaces for advanced AlOx coatings by improving its bonding and unique distribution. Due to the extreme thinness of the inline coating, the films are within the tough laws on recyclability.

Digitalisation in film production with Brückner ONE: The brand new Brückner ONE digital service platform provides a one-stop modular



solution and supports all matters of the line and its operation such as service requests, spare parts inquiries, communication and line documentation anywhere, anytime and using any tool. It brings field-proven service products to a new, digital level, and enhances them with additional features. Brückner ONE helps to maximize the availability of film stretching lines and to minimize maintenance and downtime costs. Predictive maintenance or e-learning are next modules to come.

High quality clip and chain refurbishment service: Brückner Servtec widens its services in this segment by introducing a new clip and chain laboratory at their headquarters in Germany. The state-of-the-art set-up allows a professional inspection of the sample parts and thus enables a better and more efficient planning of maintenance tasks at the film stretching line. The inspection is a free of charge service to customers. Brückner's clip and chain refurbishment centres are located globally and equipped with the latest equipment and tools, providing the best way to disassemble, clean, fix, refurbish and correct small and major mechanical issues. It ensures a maximum availability of the chain

and clips and the entire production line.

Twin Screw Extrusion for wide and flexible product and output range:

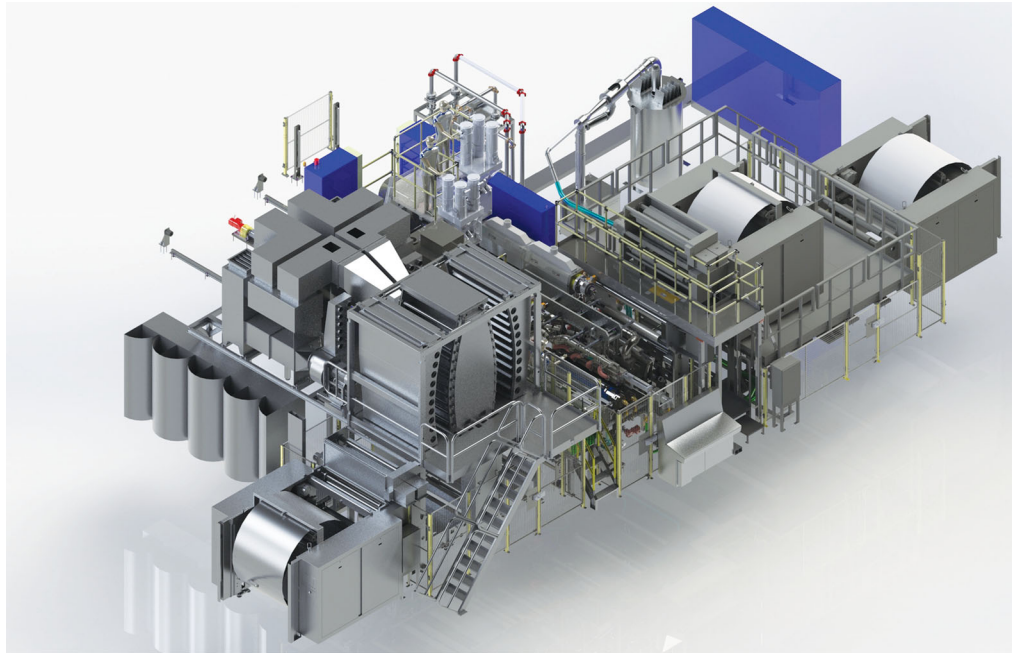
The twinscrew extruder is the preferred extruder design in all modern Brückner biax lines. In the past years, Brückner Servtec has conducted more than a dozen very successful twinscrew upgrades for various customers at their own but also other OEM lines around the world. It is not only increasing the film quality but moreover reduces the energy consumption significantly, another milestone in the circular economy endeavour to "reduce".

At the joint Brückner Group booth, besides Brückner Maschinenbau and Brückner Servtec, visitors will also meet Kiefel, showing the latest developments for the packaging, medical and appliance industry, and PackSys Global, presenting advanced packaging equipment.



interplastica 2020: 2. 2C16

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

dsX flex-pack 300S

Packaging Line, Blown Film Technology and more

Davis-Standard will begin its 2020 tradeshow season in Moscow, Russia, at Interplastica. Located in booth #22C32, representatives from Davis-Standard's subsidiaries in Germany and the United Kingdom will be available to discuss technology for blown film, cast film, extrusion coating, foam, profile and sheet applications. The company will specifically focus on its dsX™ product line for packaging applications, which provides processing versatility, a timely delivery and competitive pricing. Examples of this technology include the dsX™ 400 aseptic packaging line and dsX flex-pack™ 300S flexible packaging line. Davis-Standard will also promote its high output blown film capabilities.

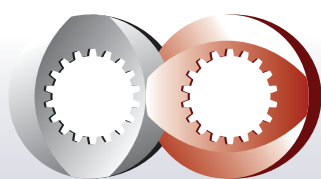
The dsX 400 aseptic packaging line is a pre-engineered triplex extrusion coating and laminating line for paper, aluminum foils and/or films used in aseptic packaging applications. It is designed for a working

width range of 700 to 1,350 mm, a mechanical design speed up to 450 meters per minute, and processing speeds up to 400 meters per minute. This line is also equipped with automatic unwind and rewind splicers for speed and efficiency. This is a single-source system with Davis-Standard supplying extruders, feedscrews and extrusion dies to support customer requirements.

The dsX flex-pack 300S flexible packaging line is built for cost-sensitive flexible packaging applications. Proven components and a pre-configured, adaptable machine configuration make this system ideal for converters, printing companies, multi-national companies and start-ups. It can support web widths from 650 to 1,350 mm and process line speeds up to 300 meters per minute for paper, film and aluminum foils with direct gravure primer coating and coextrusion coating lamination stations. Hallmarks of this line in-

clude consistent end-product quality, greater uptime and productivity, reduced waste and application versatility.

Davis-Standard supplies complete blown film systems to support monolayer processes as well as complex multi-layer applications with film structures up to 11 layers. Component upgrades are available to improve existing blown film production for lay-flat widths from one to 10 meters. Blown film systems feature the latest extrusion and screw technology, die and air ring developments, and options for film handling and winding to support optimal and cost-effective processing based on application.



18th TECHNOLOGICAL CONFERENCE Extrusion Russia 2020

29th January 2020
under Interplastica show
Registration opens at **10:00**



Moscow, Expocenter
Hall D1 at the 3rd level
of corner tower D, Pavilion 1



Topics for discussion

- ▶ Equipment for various extrusion segments: film, tube, sheet, cable, as well as geosynthetics
- ▶ Key components of an extrusion line (filters, melt pumps, degassers, etc.)
- ▶ Tooling (dies, heads, calibrators, corrugators), quick change and cleaning solutions
- ▶ Peripherals for material preparation, transport and dosing
- ▶ Downstream equipment (orientation systems, withdrawal and cutting devices, winders, laminators, markers, packers)
- ▶ Automation tools for extrusion lines
- ▶ Special material grades, additives and fillers for extrusion
- ▶ Compounding and pelletizing of composites and masterbatches
- ▶ Special aspects of twin-screw extrusion
- ▶ Quality control of raw materials and final product parameters
- ▶ Flat-die extrusion, extrusion blow molding, thermoforming
- ▶ Extrusion in recycling of industrial and household plastic waste
- ▶ Engineering and optimization of extrusion processes

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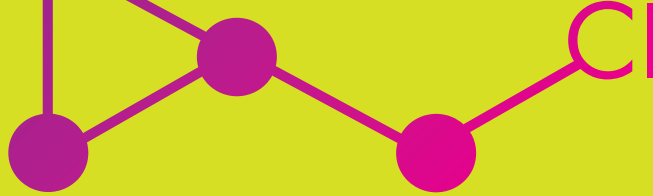
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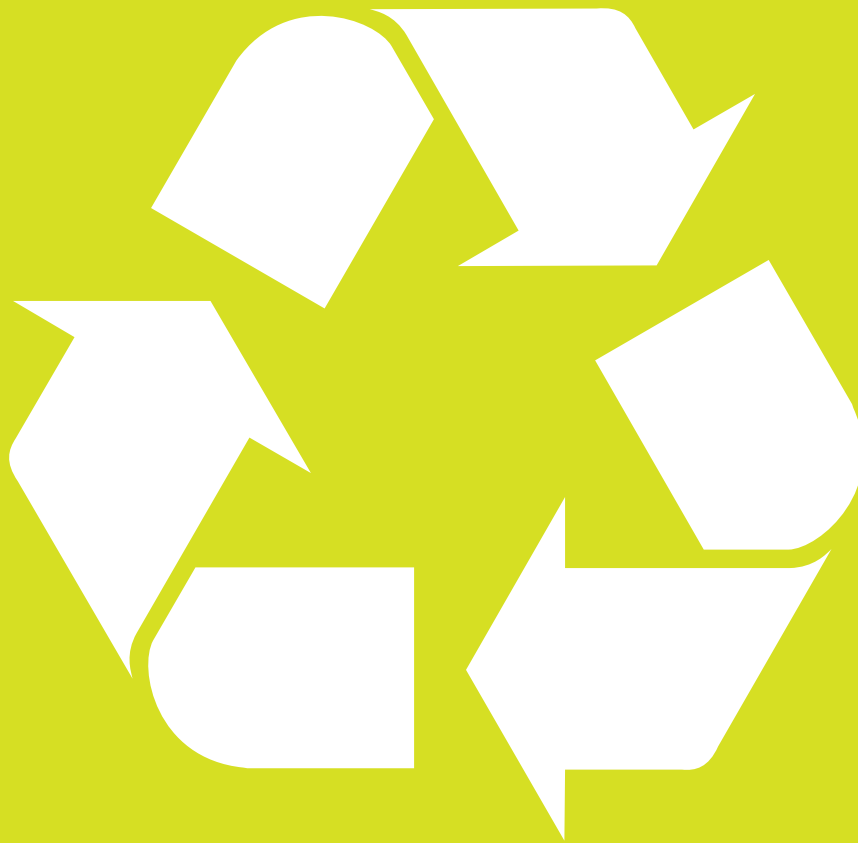


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EXPO UA



XII International Specialized Exhibition
of equipment and technologies for plastics
and rubber production and processing



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**March 31 –
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2020**

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Technical partner:  **RentMedia**